

* * * * * * * * * * * * * Welcome to STN International * * * * * * * * *

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| <u>NEWS 1</u> | Web Page URLs for STN Seminar Schedule - N. America |
| <u>NEWS 2</u> | "Ask CAS" for self-help around the clock |
| <u>NEWS 3</u> | JUL 20 Powerful new interactive analysis and visualization software, STN AnaVist, now available |
| <u>NEWS 4</u> | AUG 11 STN AnaVist workshops to be held in North America |
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| <u>NEWS 7</u> | SEP 09 ACD predicted properties enhanced in REGISTRY/ZREGISTRY |
| <u>NEWS 8</u> | OCT 03 MATHDI removed from STN |
| <u>NEWS 9</u> | OCT 04 CA/CAPLUS-Canadian Intellectual Property Office (CIPO) added to core patent offices |
| <u>NEWS 10</u> | OCT 06 STN AnaVist workshops to be held in North America |
| <u>NEWS 11</u> | OCT 13 New CAS Information Use Policies Effective October 17, 2005 |
| <u>NEWS 12</u> | OCT 17 STN(R) AnaVist(TM), Version 1.01, allows the export/download of CAPLUS documents for use in third-party analysis and visualization tools |
| <u>NEWS 13</u> | OCT 27 Free KWIC format extended in full-text databases |
| <u>NEWS 14</u> | OCT 27 DIOGENES content streamlined |
| <u>NEWS 15</u> | OCT 27 EPFULL enhanced with additional content |

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| <u>NEWS EXPRESS</u> | JUNE 13 CURRENT WINDOWS VERSION IS V8.0, CURRENT MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP), AND CURRENT DISCOVER FILE IS DATED 13 JUNE 2005 |
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| <u>NEWS INTER</u> | General Internet Information |
| <u>NEWS LOGIN</u> | Welcome Banner and News Items |
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FILE 'HOME' ENTERED AT 08:30:35 ON 31 OCT 2005

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 FILE LAST UPDATED: 30 Oct 2005 (20051030/ED)

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=> s azide and (halide or fluoride or bromide or chloride or iodide)

40516 AZIDE
 8453 AZIDES
 42884 AZIDE
 (AZIDE OR AZIDES)
 149189 HALIDE
 124494 HALIDES
 216721 HALIDE
 (HALIDE OR HALIDES)
 243148 FLUORIDE
 43914 FLUORIDES
 258477 FLUORIDE
 (FLUORIDE OR FLUORIDES)
 256062 BROMIDE
 29294 BROMIDES
 269554 BROMIDE
 (BROMIDE OR BROMIDES)
 1049962 CHLORIDE
 154349 CHLORIDES
 1120439 CHLORIDE
 (CHLORIDE OR CHLORIDES)
 169314 IODIDE
 23765 IODIDES
 178938 IODIDE
 (IODIDE OR IODIDES)

L1 11392 AZIDE AND (HALIDE OR FLUORIDE OR BROMIDE OR CHLORIDE OR IODIDE)

=> l and transition metal

1 IS NOT A RECOGNIZED COMMAND

The previous command name entered was not recognized by the system.
 For a list of commands available to you in the current file, enter
"HELP COMMANDS" at an arrow prompt (>).

=> s ll and transition metal

906033 TRANSITION
 249612 TRANSITIONS
 1014697 TRANSITION
 (TRANSITION OR TRANSITIONS)
 1605806 METAL
 812964 METALS
 1948341 METAL
 (METAL OR METALS)
 173986 TRANSITION METAL
 (TRANSITION(W) METAL)

L2 162 L1 AND TRANSITION METAL

=> s 12 and dimethyl
 335450 DIMETHYL
 44 DIMETHYLS
 335473 DIMETHYL
 (DIMETHYL OR DIMETHYLS)

L3 10 L2 AND DIMETHYL

=> d 13 1-10 all

L3 ANSWER 1 OF 10 CAPLUS COPYRIGHT 2005 ACS on STN

| | Full Text | Citing References | | |
|-----------|--|-------------------|----------|------------------------|
| AN | 2004:161244 | CAPLUS | | |
| DN | 140:202430 | | | |
| ED | Entered STN: 27 Feb 2004 | | | |
| TI | Salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials | | | |
| IN | Armand, Michel; Michot, Christophe; Gauthier, Michel; Choquette, Yves | | | |
| PA | Hydro-Quebec, Can.; Centre National De La Recherche Scientifique (CNRS) | | | |
| SO | Eur. Pat. Appl., 33 pp. | | | |
| | CODEN: EPXXDW | | | |
| DT | Patent | | | |
| LA | French | | | |
| IC | ICM H01M006-16 | | | |
| | ICS H01M010-40 | | | |
| CC | 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 27, 28, 29, 35, 76 | | | |
| FAN.CNT 5 | | | | |
| | PATENT NO. | KIND | DATE | APPLICATION NO. |
| PI | <u>EP 1391952</u> | A2 | 20040225 | <u>EP 2003-292436</u> |
| | R: DE, FR, GB, IT | | | 19971230 |
| | <u>CA 2194127</u> | AA | 19980630 | <u>CA 1996-2194127</u> |
| | <u>CA 2199231</u> | AA | 19980905 | <u>CA 1997-2199231</u> |
| | <u>EP 850933</u> | A1 | 19980701 | <u>EP 1997-403188</u> |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO | | | 19971230 |
| | <u>EP 889863</u> | A2 | 19990113 | <u>EP 1997-951051</u> |
| | <u>EP 889863</u> | B1 | 20030507 | |
| | R: DE, FR, GB, IT | | | |
| | <u>EP 890176</u> | A1 | 19990113 | <u>EP 1997-951052</u> |
| | <u>EP 890176</u> | B1 | 20010620 | |
| | R: DE, FR, GB, IT | | | |
| | <u>JP 2000508114</u> | T2 | 20000627 | <u>JP 1998-529517</u> |
| | <u>JP 2000508346</u> | T2 | 20000704 | <u>JP 1998-529516</u> |
| | <u>JP 2000508676</u> | T2 | 20000711 | <u>JP 1998-529514</u> |
| | <u>JP 2000508677</u> | T2 | 20000711 | <u>JP 1998-529515</u> |
| | <u>JP 2000508678</u> | T2 | 20000711 | <u>JP 1998-529518</u> |
| | <u>JP 2002514245</u> | T2 | 20020514 | <u>JP 1998-529513</u> |
| | <u>US 6120696</u> | A | 20000919 | <u>US 1998-125792</u> |
| | <u>US 6171522</u> | B1 | 20010109 | <u>US 1998-101811</u> |
| | <u>US 6333425</u> | B1 | 20011225 | <u>US 1998-101810</u> |
| | <u>US 6228942</u> | B1 | 20010508 | <u>US 1998-125798</u> |
| | <u>US 6395367</u> | B1 | 20020528 | <u>US 1998-125799</u> |
| | <u>US 6319428</u> | B1 | 20011120 | <u>US 1998-125797</u> |
| | <u>US 6365068</u> | B1 | 20020402 | <u>US 2000-609362</u> |
| | <u>US 6576159</u> | B1 | 20030610 | <u>US 2000-638793</u> |
| | <u>US 2001024749</u> | A1 | 20010927 | <u>US 2001-826941</u> |
| | <u>US 6506517</u> | B2 | 20030114 | |
| | <u>US 2002009650</u> | A1 | 20020124 | <u>US 2001-858439</u> |
| | | | | 20010516 |

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|-----------------------------|----|----------|-----------------------|----------|
| <u>US 2002102380</u> | A1 | 20020801 | <u>US 2002-107742</u> | 20020327 |
| <u>US 6835495</u> | B2 | 20041228 | | |
| <u>US 2003052310</u> | A1 | 20030320 | <u>US 2002-253035</u> | 20020924 |
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| <u>US 2005074668</u> | A1 | 20050407 | <u>US 2004-789453</u> | 20040227 |
| <u>US 2005123831</u> | A1 | 20050609 | <u>US 2004-926283</u> | 20040825 |
| <u>PRAI CA 1996-2194127</u> | A | 19961230 | | |
| <u>CA 1997-2199231</u> | A | 19970305 | | |
| <u>EP 1997-403188</u> | A3 | 19971230 | | |
| <u>WO 1997-CA1008</u> | W | 19971230 | | |
| <u>WO 1997-CA1009</u> | W | 19971230 | | |
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| <u>WO 1997-CA1011</u> | W | 19971230 | | |
| <u>WO 1997-CA1012</u> | W | 19971230 | | |
| <u>WO 1997-CA1013</u> | W | 19971230 | | |
| <u>US 1998-101810</u> | A3 | 19981119 | | |
| <u>US 1998-101811</u> | A3 | 19981119 | | |
| <u>US 1998-125798</u> | A3 | 19981202 | | |
| <u>US 1998-125799</u> | A3 | 19981202 | | |
| <u>US 1998-125797</u> | A1 | 19981203 | | |
| <u>US 2000-638793</u> | A1 | 20000809 | | |
| <u>US 2001-858439</u> | A1 | 20010516 | | |
| <u>US 2002-107742</u> | A1 | 20020327 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|-------------------|-------|---|
| <u>EP 1391952</u> | ICM | H01M006-16 |
| | ICS | H01M010-40 |
| <u>EP 1391952</u> | ECLA | B01J031/04; C07D231/18; C07D233/90; C07D249/04;
C07D249/10; C07D249/12; C07D307/54; C07D311/52;
C07D311/58; C07D311/82; C07D333/16; C07D333/24;
C07D405/06+303+249B; H01B001/12F |
| <u>CA 2194127</u> | ECLA | B01J031/02E2; B01J031/04; C07B037/02; C07B037/12;
C07B044/06; C07C045/46+49/84; C07C045/69+49/553;
C07C067/00; C07C255/10; C07C255/17; C07C255/27;
C07C255/46; C07C255/65; C07C257/14; C07C311/03;
C07C311/04; C07C311/09; C07C311/48; C07C317/04;
C07C317/08; C07C317/14; C07C317/22; C07C317/24;
C07C317/34; C07D207/44D1B; C07D213/76D; C07D219/10;
C07D231/18; C07D233/90; C07D239/60; C07D241/42D;
C07D249/04; C07D249/10; C07D249/12; C07D251/70;
C07D277/64; C07D277/82; C07D285/00D; C07D285/12D4;
C07D285/12D6F1; C07D285/16D; C07D303/34; C07D307/54;
C07D307/64; C07D311/52; C07D311/58; C07D311/82;
C07D319/06; C07D333/16; C07D333/24;
C07D405/06+303+249B; C07D409/12+333B+319;
C07D417/10+311+285; C07D417/14+285+277;
C07D417/14+285+277+277; C07F017/02; C08F004/04;
C08G065/334D; C09B069/00; C09B069/02; C09B069/10;
H01B001/12F; H01B001/12H6; H01G009/02C; H01G009/02D;
H01M006/00; H01M006/16E3; H01M006/18B; H01M006/18C2;
H01M010/40B; H01M010/40E3; H01M010/40L2
B01J031/02E2; C07D417/14+285+277+277; |
| <u>CA 2199231</u> | ECLA | C07D417/14+285+277; C07F017/02; C08F004/04;
C08G065/334D; C09B069/00; C09B069/02; C09B069/10;
H01B001/12F; H01B001/12H6; H01G009/02C; H01G009/02D;
H01M006/00; H01M006/16E3; H01M006/18B; H01M006/18C2;
H01M010/40B; H01M010/40E3; H01M010/40L2; B01J031/04;
C07C255/46; C07C255/65; C07C257/14; C07C311/03;
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C07D307/64; C07D311/52; C07D311/58; C07D311/82;
C07D319/06; C07D333/16; C07D333/24;
C07D405/06+303+249B; C07D409/12+333B+319;
C07D417/10+311+285; C07B037/02; C07B037/12; C07B044/06;
C07C045/46+49/84; C07C045/69+49/553; C07C067/00;
C07C255/10; C07C255/17; C07C255/27 |
| <u>EP 850933</u> | ECLA | B01J031/02E2; C07C067/00; C07C255/10; C07C255/17;
C07C255/27; C07C255/46; C07C255/65; C07C257/14;
C07C311/03; C07C311/04; C07C311/09; C07C311/48;
C07C317/04; C07C317/08; C07C317/14; C07C317/22;
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C07D307/54; C07D307/64; C07D311/52; C07D311/58;
C07D311/82; C07D319/06; C07D333/16; B01J031/04;
C07D333/24; C07D405/06+303+249B; C07D409/12+333B+319;
C07D417/10+311+285; C07D417/14+285+277+277; C07F017/02;
C08F004/04; C08G065/334D; C09B069/00; C09B069/02;
C09B069/10; H01B001/12F; H01B001/12H6; H01G009/02C;
H01G009/02D; H01M006/00; H01M006/18B; H01M010/40B;
H01M010/40E3; H01M010/40L2; C07B037/02; C07B037/12;
C07B044/06; C07C045/46+49/84; C07C045/69+49/553 |
| <u>US 6120696</u> | NCL | 252/062.200; 359/265.000; 359/270.000 |
| | ECLA | B01J031/02E2; C07C317/34; C07D207/44D1B; C07D213/76D;
C07D219/10; C07D231/18; C07D233/90; C07D239/60;
C07D241/42D; C07D249/04; C07D249/10; C07D249/12;
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C09B069/10; H01B001/12F; H01B001/12H6; H01G009/02C;
H01G009/02D; H01M006/00; B01J031/04; H01M006/16E3;
H01M006/18B; H01M006/18C2; H01M010/40B; H01M010/40E3;
H01M010/40L2; C07B037/02; C07B037/12; C07B044/06;
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C07C255/65; C07C257/14; C07C311/03; C07C311/04;
C07C311/09; C07C311/48; C07C317/04; C07C317/08;
C07C317/14; C07C317/22; C07C317/24 |
| <u>US 6171522</u> | NCL | 252/500.000; 252/062.200; 345/049.000; 359/265.000;
429/188.000; 429/199.000; 429/324.000; 502/102.000;
502/300.000; 502/302.000; 549/014.000; 549/357.000 |
| | ECLA | B01J031/02E2; C07C311/04; C07C311/09; C07C311/48;
C07C317/04; C07C317/08; C07C317/14; C07C317/22;
C07C317/24; C07C317/34; C07D207/44D1B; C07D213/76D;
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C07D417/10+311+285; C07D417/14+285+277+277; C07F017/02;
C08F004/04; C08G065/334D; B01J031/04; C09B069/00;
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C07C311/03 |
| <u>US 6333425</u> | NCL | 558/167.000; 534/838.000; 546/096.000; 546/256.000;
548/300.100; 548/340.100; 558/386.000; 558/440.000;
558/453.000 |
| | ECLA | B01J031/02E2; B01J031/04; C07D249/12; C07D251/70;
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C07D231/18; C07D233/90; C07D239/60; C07D241/42D;
C07D249/04; C07D249/10 |
| <u>US 6228942</u> | NCL | 525/183.000; 252/511.000; 428/367.000; 524/495.000;
524/496.000; 525/066.000; 525/263.000 |
| | ECLA | B01J031/02E2; C07C311/04; C07C311/09; C07C311/48;
C07C317/04; C07C317/08; C07C317/14; C07C317/22;
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C08F004/04; C08G065/334D; B01J031/04; C09B069/00;
C09B069/02; C09B069/10; H01B001/12F; H01B001/12H6;
H01G009/02C; H01G009/02D; H01M006/00; H01M006/18B;
H01M010/40B; H01M010/40E3; H01M010/40L2; C07B037/02;
C07B037/12; C07B044/06; C07C045/46+49/84;
C07C045/69+49/553; C07C067/00; C07C255/10; C07C255/17;
C07C255/27; C07C255/46; C07C255/65; C07C257/14;
C07C311/03 |
| <u>US 6395367</u> | NCL | 428/064.800; 359/265.000; 429/188.000; 429/324.000;
430/541.000; 430/926.000; 548/262.200; 548/267.800;
548/268.200 |
| | ECLA | B01J031/02E2; C07C255/10; C07C255/17; C07C255/27;
C07C255/46; C07C255/65; C07C257/14; C07C311/03; |

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| | | C07C311/04; C07C311/09; C07C311/48; C07C317/04;
C07C317/08; C07C317/14; C07C317/22; C07C317/24;
C07C317/34; C07D207/44D1B; C07D213/76D; C07D219/10;
C07D231/18; C07D233/90; C07D239/60; C07D241/42D;
C07D249/04; C07D249/10; C07D249/12; C07D251/70;
C07D277/64; C07D277/82; C07D285/00D; C07D285/12D4;
C07D285/12D6F1; C07D285/16D; C07D303/34; C07D307/54;
C07D307/64; C07D311/52; C07D311/58; C07D311/82;
C07D319/06; C07D333/16; C07D333/24; B01J031/04;
C07D405/06+303+249B; C07D409/12+333B+319;
C07D417/10+311+285; C07D417/14+285+277+277; C07F017/02;
C08F004/04; C08G065/334D; C09B069/00; C09B069/02;
C09B069/10; H01B001/12F; H01B001/12H6; H01G009/02C;
H01G009/02D; H01M006/00; H01M006/18B; H01M010/40B;
H01M010/40E3; H01M010/40L2; C07B037/02; C07B037/12;
C07B044/06; C07C045/46+49/84; C07C045/69+49/553;
C07C067/00 |
| <u>US 6319428</u> | NCL | 252/500.000; 029/623.100; 361/327.000; 429/199.000;
429/200.000; 429/245.000; 564/096.000; 564/098.000;
568/027.000 |
| | ECLA | B01J031/02E2; H01M010/40L2; B01J031/04; C07D219/10;
C07D231/18; C07D233/90; C07D239/60; C07D241/42D;
C07D249/04; C07D249/10; C07D249/12; C07D251/70;
C07D277/64; C07D277/82; C07D285/00D; C07D285/12D6F1;
C07D285/12D4; C07D285/16D; C07D303/34; C07D307/54;
C07D307/64; C07D311/52; C07D311/58; C07D311/82;
C07D319/06; C07D333/16; C07D333/24;
C07D405/06+303+249B; C07D409/12+333B+319;
C07D417/10+311+285; C07D417/14+285+277+277; C07F017/02;
C08F004/04; C08G065/334D; C09B069/00; C09B069/02;
C09B069/10; H01B001/12F; H01B001/12H6; H01G009/02C;
H01G009/02D; H01M006/00; H01M006/18B; H01M010/40B;
H01M010/40E3; C07B037/02; C07B037/12; C07B044/06;
C07C045/46+49/84; C07C045/69+49/553; C07C067/00;
C07C255/10; C07C255/17; C07C255/27; C07C255/46;
C07C255/65; C07C257/14; C07C311/03; C07C311/04;
C07C311/09; C07C311/48; C07C317/04; C07C317/08;
C07C317/14; C07C317/22; C07C317/24; C07C317/34;
C07D207/44D1B; C07D213/76D |
| <u>US 6365068</u> | NCL | 252/500.000; 252/062.200; 345/049.000; 359/265.000;
429/188.000; 429/199.000; 502/102.000; 502/300.000;
502/302.000; 549/014.000 |
| | ECLA | B01J031/02E2; C07C067/00; C07C255/10; C07C255/17;
C07C255/27; C07C255/46; C07C255/65; C07C257/14;
C07C311/03; C07C311/04; C07C311/09; C07C311/48;
C07C317/04; C07C317/08; C07C317/14; C07C317/22;
C07C317/24; C07C317/34; C07D207/44D1B; C07D213/76D;
C07D219/10; C07D231/18; C07D233/90; C07D239/60;
C07D241/42D; C07D249/04; C07D249/10; C07D249/12;
C07D251/70; C07D277/64; C07D277/82; C07D285/00D;
C07D285/12D4; C07D285/12D6F1; C07D285/16D; C07D303/34;
C07D307/54; C07D307/64; C07D311/52; C07D311/58;
C07D311/82; C07D319/06; C07D333/16; B01J031/04;
C07D333/24; C07D405/06+303+249B; C07D409/12+333B+319;
C07D417/10+311+285; C07D417/14+285+277+277; C07F017/02;
C08F004/04; C08G065/334D; C09B069/00; C09B069/02;
C09B069/10; H01B001/12F; H01B001/12H6; H01G009/02C;
H01G009/02D; H01M006/00; H01M006/18B; H01M010/40B;
H01M010/40E3; H01M010/40L2; C07B037/02; C07B037/12;
C07B044/06; C07C045/46+49/84; C07C045/69+49/553 |

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| <u>US 6576159</u> | NCL | 252/511.000; 252/062.200; 252/500.000; 252/510.000;
252/518.100; 252/519.200; 252/519.300; 429/188.000;
546/256.000; 548/300.100; 556/001.000; 556/143.000;
558/167.000; 558/440.000; 558/453.000 |
| | ECLA | B01J031/02E2; B01J031/04; C07D285/12D4; C07D285/12D6F1;
C07D285/16D; C07D303/34; C07D307/54; C07D307/64;
C07D311/52; C07D311/58; C07D311/82; C07D319/06;
C07D333/16; C07D333/24; C07D405/06+303+249B;
C07D409/12+333B+319; C07D417/10+311+285;
C07D417/14+285+277+277; C07F017/02; C08F004/04;
C08G065/334D; C09B069/00; C09B069/02; C09B069/10;
H01B001/12F; H01B001/12H6; H01G009/02C; H01G009/02D;
H01M006/00; H01M006/18B; H01M010/40B; H01M010/40E3;
H01M010/40L2; C07B037/02; C07B037/12; C07B044/06;
C07C045/46+49/84; C07C045/69+49/553; C07C067/00;
C07C255/10; C07C255/17; C07C255/27; C07C255/46;
C07C255/65; C07C257/14; C07C311/03; C07C311/04;
C07C311/09; C07C311/48; C07C317/04; C07C317/08;
C07C317/14; C07C317/22; C07C317/24; C07C317/34;
C07D207/44D1B; C07D213/76D; C07D219/10; C07D231/18;
C07D233/90; C07D239/60; C07D241/42D; C07D249/04;
C07D249/10; C07D249/12; C07D251/70; C07D277/64;
C07D277/82; C07D285/00D |
| <u>US 2001024749</u> | NCL | 429/122.000 |
| | ECLA | B01J031/02E2; H01M010/40L2; B01J031/04; C07D219/10;
C07D231/18; C07D233/90; C07D239/60; C07D241/42D;
C07D249/04; C07D249/10; C07D249/12; C07D251/70;
C07D277/64; C07D277/82; C07D285/00D; C07D285/12D4;
C07D285/12D6F1; C07D285/16D; C07D303/34; C07D307/54;
C07D307/64; C07D311/52; C07D311/58; C07D311/82;
C07D319/06; C07D333/16; C07D333/24;
C07D405/06+303+249B; C07D409/12+333B+319;
C07D417/10+311+285; C07D417/14+285+277+277; C07F017/02;
C08F004/04; C08G065/334D; C09B069/00; C09B069/02;
C09B069/10; H01B001/12F; H01B001/12H6; H01G009/02C;
H01G009/02D; H01M006/00; H01M006/18B; H01M010/40B;
H01M010/40E3; C07B037/02; C07B037/12; C07B044/06;
C07C045/46+49/84; C07C045/69+49/553; C07C067/00;
C07C255/10; C07C255/17; C07C255/27; C07C255/46;
C07C255/65; C07C257/14; C07C311/03; C07C311/04;
C07C311/09; C07C311/48; C07C317/04; C07C317/08;
C07C317/14; C07C317/22; C07C317/24; C07C317/34;
C07D207/44D1B; C07D213/76D |
| <u>US 2002009650</u> | NCL | 429/314.000 |
| | ECLA | B01J031/02E2; C07D249/04; C07D249/10; C07D249/12;
C07D251/70; C07D277/64; C07D277/82; C07D285/00D;
C07D285/12D4; C07D285/12D6F1; C07D285/16D; C07D303/34;
C07D307/54; C07D307/64; C07D311/52; C07D311/58;
C07D311/82; C07D319/06; C07D333/16; C07D333/24;
C07D405/06+303+249B; C07D409/12+333B+319;
C07D417/10+311+285; C07D417/14+285+277+277; C07F017/02;
C08F004/04; C08G065/334D; C09B069/00; C09B069/02;
C09B069/10; H01B001/12F; H01B001/12H6; H01G009/02C;
H01G009/02D; H01M006/00; H01M006/18B; H01M010/40B;
H01M010/40E3; H01M010/40L2; B01J031/04; C07B037/02;
C07B037/12; C07B044/06; C07C045/46+49/84;
C07C045/69+49/553; C07C067/00; C07C255/10; C07C255/17;
C07C255/27; C07C255/46; C07C255/65; C07C257/14;
C07C311/03; C07C311/04; C07C311/09; C07C311/48;
C07C317/04; C07C317/08; C07C317/14; C07C317/22; |

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| | | C07C317/24; C07C317/34; C07D207/44D1B; C07D213/76D;
C07D219/10; C07D231/18; C07D233/90; C07D239/60;
C07D241/42D
428/064.800 |
| <u>US 2002102380</u> | NCL | B01J031/02E2; B01J031/04; C07B037/02; C07B037/12;
C07B044/06; C07C045/46+49/84; C07C045/69+49/553;
C07C067/00; C07C255/10; C07C255/17; C07C255/27;
C07C255/46; C07C255/65; C07C257/14; C07C311/03;
C07C311/04; C07C311/09; C07C311/48; C07C317/04;
C07C317/08; C07C317/14; C07C317/22; C07C317/24;
C07C317/34; C07D207/44D1B; C07D213/76D; C07D219/10;
C07D231/18; C07D233/90; C07D239/60; C07D241/42D;
C07D249/04; C07D249/10; C07D249/12; C07D251/70;
C07D277/64; C07D277/82; C07D285/00D; C07D285/12D4;
C07D285/12D6F1; C07D285/16D; C07D303/34; C07D307/54;
C07D307/64; C07D311/52; C07D311/58; C07D311/82;
C07D319/06; C07D333/16; C07D333/24;
C07D405/06+303+249B; C07D409/12+333B+319;
C07D417/10+311+285; C07D417/14+285+277+277; C07F017/02;
C08F004/04; C08G065/334D; C09B069/00; C09B069/02;
C09B069/10; H01B001/12F; H01B001/12H6; H01G009/02C;
H01G009/02D; H01M006/00; H01M006/18B; H01M010/40B;
H01M010/40E3; H01M010/40L2 |
| <u>US 2003052310</u> | NCL | 252/500.000 |
| | ECLA | B01J031/02E2; B01J031/04; C07D285/12D4; C07D285/12D6F1;
C07D285/16D; C07D303/34; C07D307/54; C07D307/64;
C07D311/52; C07D311/58; C07D311/82; C07D319/06;
C07D333/16; C07D333/24; C07D405/06+303+249B;
C07D409/12+333B+319; C07D417/10+311+285;
C07D417/14+285+277+277; C07F017/02; C08F004/04;
C08G065/334D; C09B069/00; C09B069/02; C09B069/10;
H01B001/12F; H01B001/12H6; H01G009/02C; H01G009/02D;
H01M006/00; H01M006/18B; H01M010/40B; H01M010/40E3;
H01M010/40L2; C07B037/02; C07B037/12; C07B044/06;
C07C045/46+49/84; C07C045/69+49/553; C07C067/00;
C07C255/10; C07C255/17; C07C255/27; C07C255/46;
C07C255/65; C07C257/14; C07C311/03; C07C311/04;
C07C311/09; C07C311/48; C07C317/04; C07C317/08;
C07C317/14; C07C317/22; C07C317/24; C07C317/34;
C07D207/44D1B; C07D213/76D; C07D219/10; C07D231/18;
C07D233/90; C07D239/60; C07D241/42D; C07D249/04;
C07D249/10; C07D249/12; C07D251/70; C07D277/64;
C07D277/82; C07D285/00D |
| <u>US 2003066988</u> | NCL | 252/500.000 |
| | ECLA | B01J031/02E2; B01J031/04; C07D251/70; C07D277/64;
C07D277/82; C07D285/00D; C07D285/12D4; C07D285/12D6F1;
C07D285/16D; C07D303/34; C07D307/54; C07D307/64;
C07D311/52; C07D311/58; C07D311/82; C07D319/06;
C07D333/16; C07D333/24; C07D405/06+303+249B;
C07D409/12+333B+319; C07D417/10+311+285;
C07D417/14+285+277+277; C07F017/02; C08F004/04;
C08G065/334D; C09B069/00; C09B069/02; C09B069/10;
H01B001/12F; H01B001/12H6; H01G009/02C; H01G009/02D;
H01M006/00; H01M006/18B; H01M010/40B; H01M010/40E3;
H01M010/40L2; C07B037/02; C07B037/12; C07B044/06;
C07C045/46+49/84; C07C045/69+49/553; C07C067/00;
C07C255/10; C07C255/17; C07C255/27; C07C255/46;
C07C255/65; C07C257/14; C07C311/03; C07C311/04;
C07C311/09; C07C311/48; C07C317/04; C07C317/08;
C07C317/14; C07C317/22; C07C317/24; C07C317/34; |

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| | | C07D207/44D1B; C07D213/76D; C07D219/10; C07D231/18;
C07D233/90; C07D239/60; C07D241/42D; C07D249/04;
C07D249/10; C07D249/12 |
| <u>US 2005074668</u> | NCL | 429/199.000 |
| | ECLA | B01J031/02E2; B01J031/04; C07B037/02; C07B037/12;
C07B044/06; C07C045/46+49/84; C07C045/69+49/553;
C07C067/00; C07C255/10; C07C255/17; C07C255/27;
C07C255/46; C07C255/65; C07C257/14; C07C311/03;
C07C311/04; C07C311/09; C07C311/48; C07C317/04;
C07C317/08; C07C317/14; C07C317/22; C07C317/24;
C07C317/34; C07D207/44D1B; C07D213/76D; C07D219/10;
C07D231/18; C07D233/90; C07D239/60; C07D241/42D;
C07D249/04; C07D249/10; C07D249/12; C07D251/70;
C07D277/64; C07D277/82; C07D285/00D; C07D285/12D4;
C07D285/12D6F1; C07D285/16D; C07D303/34; C07D307/54;
C07D307/64; C07D311/52; C07D311/58; C07D311/82;
C07D319/06; C07D333/16; C07D333/24;
C07D405/06+303+249B; C07D409/12+333B+319;
C07D417/10+311+285; C07D417/14+285+277+277; C07F017/02;
C08F004/04; C08G065/334D; C09B069/00; C09B069/02;
C09B069/10; H01B001/12F; H01B001/12H6; H01G009/02C;
H01G009/02D; H01M006/00; H01M006/18B; H01M010/40B;
H01M010/40E3; H01M010/40L2 |
| <u>US 2005123831</u> | NCL | 429/188.000 |
| | ECLA | B01J031/02E2; B01J031/04; C07B037/02; C07B037/12;
C07B044/06; C07C045/46+49/84; C07C045/69+49/553;
C07C067/00; C07C255/10; C07C255/17; C07C255/27;
C07C255/46; C07C255/65; C07C257/14; C07C311/03;
C07C311/04; C07C311/09; C07C311/48; C07C317/04;
C07C317/08; C07C317/14; C07C317/22; C07C317/24;
C07C317/34; C07D207/44D1B; C07D213/76D; C07D219/10;
C07D231/18; C07D233/90; C07D239/60; C07D241/42D;
C07D249/04; C07D249/10; C07D249/12; C07D251/70;
C07D277/64; C07D277/82; C07D285/00D; C07D285/12D4;
C07D285/12D6F1; C07D285/16D; C07D303/34; C07D307/54;
C07D307/64; C07D311/52; C07D311/58; C07D311/82;
C07D319/06; C07D333/16; C07D333/24;
C07D405/06+303+249B; C07D409/12+333B+319;
C07D417/10+311+285; C07D417/14+285+277+277; C07F017/02;
C08F004/04; C08G065/334D; C09B069/00; C09B069/02;
C09B069/10; H01B001/12F; H01B001/12H6; H01G009/02C;
H01G009/02D; H01M006/00; H01M006/18B; H01M010/40B;
H01M010/40E3; H01M010/40L2 |

AB This invention describes ionic compds. where the anionic charge is delocalized. One compd. of the invention contains an anionic part assocd. with at least one mono- or multivalent cationic part Mm+, in a no. sufficient to ensure electronic neutrality of the material. M can be a hydronium, nitrosyl NO⁺, an ammonium NH₄⁺, a metallic cation with valence m, an org. cation having a valence m, or an organometallic cation having valence m. The anionic charge is carried by a new pentacyclic moiety or deriv. of tetrapentalene carrying electroattractive substituents. The compds. are used notably for ionic conduction, electronic conductors, dyes and colorants, and catalysts for diverse chem. reactions. They can also be used as electrolytes in fuel cells and batteries.

ST pentacyclic tetrapentalene salt charge delocalized anion ionic conduction; alkali alk earth transition metal salt heterocyclic electrolyte polymer; electrochem cell fuel polyelectrolyte cond soly catalysis fluoropolymer polysiloxane

IT Polyoxyalkylenes, uses
RL: TEM (Technical or engineered material use); USES (Uses)

(5-membered ring- contg.; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Spinel-type crystals
 (LiyMn_{1-x}M_xO₂, pos. electrode; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Polymerization
 (anionic; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Solvents
 (aprotic, title compds. sol. in; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Polymers, uses
 RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (block, ethylene oxide, propylene oxide, allyl glycidyl ether; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Optical absorption
 (by polymer electrolytes; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Carbon black, uses
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (composite electrodes with soft polymer or LiCoO₂ and polymer gel electrolytes, or with acetylene black, VO₂ and PEO; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Ethers, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (cyclic, solvent for title compds.; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Polysiloxanes, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (di-Me, Me hydrogen, a trimethylsilyl-terminated polysiloxane; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Lithiation
 (during battery operation; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Polyoxyalkylenes, processes
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
 (electrolyte complexes with lithium salts, carbon blacks, (1,2,3-triazolium) ionic liqs., and other materials; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Substituent effects
 (electronic, electron-withdrawing substituents; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Polyoxyalkylenes, uses
 RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (esters, esters of dicarboxylic acid-substituted 1,2,3-triazole salts; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Heterocyclic compounds
 RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (five-membered, arom., with combinations of N, S, P in ring, anions of;

salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Polysiloxanes, uses
 RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (fluorine-contg., reaction products; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Polysiloxanes, uses
 RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
 (fluorine-contg.; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Aromatic hydrocarbons, preparation
 RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (halo, anions contg. 5-membered rings; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Hydrocarbons, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (halo, solvent for title compds.; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Cyano group
 (ionic compds. contg.; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Phosphates, uses
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (iron, manganese, and lithium -contg.; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Textiles
 (laminated, polyelectrolyte composite membrane perfluorinated sulfonylpyrazole-contg. polymer; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Heterocyclic compounds
 RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (nitrogen, five-membered, arom., anions of; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Open circuit potential
 (of dye-sensitized solar cells with imidazolium-triazole-iodide electrolytes; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Ionic conductivity
 (of lithium salts in polymer electrolytes and polymer gel electrolytes; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Cyclic voltammetry
 (of secondary battery cells with polymer gel electrolytes; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Polysulfides
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (org., pos. electrode; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Cations
 (org.; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Fluorides, uses
 RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (org.; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Azines
 Group VA element compounds
 RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)
 (phosphazines, polymers, "solvents" for title compds.; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Heterocyclic compounds
 RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (phosphorus, arom., five-membered, anions of; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Polar solvents
 (polymeric; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Vinyl compounds, uses
 RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (polymers; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Polyurethanes, uses
 RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)
 (polyoxyalkylene-, polyethylene glycol- based, "solvents" for title compds.; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Fluoropolymers, uses
 RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
 (polysiloxane-; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Olivine-group minerals
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (pos. electrode; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Secondary batteries
 (salts of pentacyclic or tetrapentalene derived anions for use in; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Aldol condensation catalysts
 Antistatic agents
 Coloring materials
 Corrosion inhibitors
 Dyes
 Electron delocalization
 Esterification
 Friedel-Crafts reaction catalysts
 Fuel cell separators

Heterojunction solar cells
 Ionic liquids
 Michael reaction catalysts
 Plasticizers
 Polyelectrolytes
 Polymer electrolytes
 Polymerization catalysts
 Solubility
 Substitution reaction, nucleophilic
 Surfactants
 (salts of pentacyclic or tetrapentalene derived anions, and their uses
 as ionic conductive materials)
IT Alkali metal salts
 Transition metal salts
 RL: DEV (Device component use); PRP (Properties); PUR (Purification or
 recovery); SPN (Synthetic preparation); TEM (Technical or engineered
 material use); PREP (Preparation); USES (Uses)
 (salts of pentacyclic or tetrapentalene derived anions, and their uses
 as ionic conductive materials)
IT Fluoropolymers, uses
 Polyanilines
 Salts, uses
 RL: DEV (Device component use); PRP (Properties); SPN (Synthetic
 preparation); TEM (Technical or engineered material use); PREP
 (Preparation); USES (Uses)
 (salts of pentacyclic or tetrapentalene derived anions, and their uses
 as ionic conductive materials)
IT Quaternary ammonium compounds, uses
 RL: DEV (Device component use); PRP (Properties); TEM (Technical or
 engineered material use); USES (Uses)
 (salts of pentacyclic or tetrapentalene derived anions, and their uses
 as ionic conductive materials)
IT Polysiloxanes, uses
 RL: DEV (Device component use); RCT (Reactant); TEM (Technical or
 engineered material use); RACT (Reactant or reagent); USES (Uses)
 (salts of pentacyclic or tetrapentalene derived anions, and their uses
 as ionic conductive materials)
IT Alkaline earth salts
 Rare earth salts
 RL: DEV (Device component use); TEM (Technical or engineered material
 use); USES (Uses)
 (salts of pentacyclic or tetrapentalene derived anions, and their uses
 as ionic conductive materials)
IT Organometallic compounds
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)
 (salts with organometallic cations; salts of pentacyclic or
 tetrapentalene derived anions, and their uses as ionic conductive
 materials)
IT Nitroso compounds
 RL: DEV (Device component use); PRP (Properties); TEM (Technical or
 engineered material use); USES (Uses)
 (salts; salts of pentacyclic or tetrapentalene derived anions, and
 their uses as ionic conductive materials)
IT Electric current
 (short circuit; salts of pentacyclic or tetrapentalene derived anions,
 and their uses as ionic conductive materials)
IT Phosphates, uses
 RL: DEV (Device component use); TEM (Technical or engineered material
 use); USES (Uses)

(silico-, iron, manganese, and lithium -contg.; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Fluoropolymers, uses
 RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (siloxane-, reaction products; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Ethers, uses
 RL: DEV (Device component use); NUU (Other use, unclassified); USES (Uses)
 (solvent for title compds.; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Amides, uses
 Nitrates, uses
 Nitriles, uses
 Sulfamides
 Sulfones
 RL: NUU (Other use, unclassified); USES (Uses)
 (solvent for title compds.; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Diels-Alder reaction catalysts
 (stereoselective; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Heterocyclic compounds
 RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (sulfur, arom., five-membered, anions of; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Aromatic compounds
 RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (sulfur, heterocyclic, five-membered, anions of; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Cations
 (trivalent, metal salts; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 75-21-8D, Ethylene oxide, block polyoxyalkylene copolymers contg.
75-56-9D, Propylene oxide, block polyoxyalkylene copolymers contg.
106-92-3D, Allylglycidyl ether, block polyoxyalkylene copolymers contg.
 RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)
 ("solvents" for title compds.; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 661461-43-4P
 RL: CAT (Catalyst use); PUR (Purification or recovery); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (Aldol condensation catalyst; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 280-57-9, 1,4-Diazabicyclo[2.2.2]octane
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (DABCO; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 210469-99-1P
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
 (a dye; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 661467-43-2P
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(an antistatic surfactant; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 12036-21-4, Vanadium dioxide
 RL: DEV (Device component use); USES (Uses)
 (battery electrode composites with acetylene black and PEO; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 210469-97-9P
 RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (composite electrodes with LiCoO₂ and carbon black; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 661461-60-5DP, polyaniline doped with
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); PUR (Purification or recovery); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)
 (conductor and corrosion inhibitor; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 7439-89-6, Iron, properties
 RL: PRP (Properties)
 (corrosion of; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 1314-35-8, Tungsten trioxide, uses 202847-01-6, Hydrogen iridium oxide
 RL: DEV (Device component use); USES (Uses)
 (electrode; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 25322-68-3, Polyethylene oxide
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
 (electrolyte complexes with lithium salts, carbon blacks, (1,2,3-triazolium) ionic liqs., and other materials; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 210289-62-6P
 RL: PRP (Properties); PUR (Purification or recovery); SPN (Synthetic preparation); PREP (Preparation)
 (electrolyte, ionic liq.; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 210470-02-3P
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
 (electropolymer.; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 7429-90-5, Aluminum, uses
 RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (in electrochem. cells, and corrosion of; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
 RL: PRP (Properties)
 (in gel polymer electrolyte; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 107-13-1, Acrylonitrile, reactions
 RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
 (in gel polymer electrolyte; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 110-86-1D, Pyridine, anionic derivs.
 RL: DEV (Device component use); TEM (Technical or engineered material

use); USES (Uses)
 (including photosensitizing dyes; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 2923-16-2
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (made by Parish, see pg. 13; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 13463-67-7, Titanium dioxide, uses
 RL: DEV (Device component use); USES (Uses)
 (nanoparticles; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 7439-93-2D, Lithium, alloys
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (neg. electrode; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 661461-63-8P
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
 (photoinitiator; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 210289-59-1P
 RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (polyelectrolyte composite membrane with GoreTex and Friedel-Crafts catalyst; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 1317-37-9, Iron sulfide (FeS) 10028-22-5, Iron sulfate (Fe₂(SO₄)₃)
11099-11-9, Vanadium oxide 12068-85-8, Iron disulfide (FeS₂)
12423-04-0, Lithium vanadium oxide (LiV₃O₈) 61179-01-9, Aluminum lithium manganese oxide 131344-56-4, Cobalt lithium nickel oxide 133782-19-1, Lithium manganese vanadium oxide 162684-16-4, Lithium manganese nickel oxide 204450-96-4, Chromium lithium manganese oxide
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (pos. electrode; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 661461-54-7P
 RL: PRP (Properties); PUR (Purification or recovery); SPN (Synthetic preparation); PREP (Preparation)
 (pure and polymer electrolytes with polyethylene oxide; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 110-86-1, Pyridine, uses 865-47-4 5264-33-5 7440-50-8, Copper, uses
7440-66-6, Zinc, uses 7664-93-9, Sulfuric acid, uses 16941-12-1, Chloroplatinic acid
 RL: CAT (Catalyst use); USES (Uses)
 (salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 7580-67-8, Lithium hydride
 RL: CAT (Catalyst use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
 (salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 7553-56-2, Iodine, uses 141460-19-7, N 3 Dye 178631-05-5
 RL: DEV (Device component use); USES (Uses)
 (salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 9003-07-0, Polypropylene
 RL: DEV (Device component use); PEP (Physical, engineering or chemical

process); PYP (Physical process); PROC (Process); USES (Uses)
 (salts of pentacyclic or tetrapentalene derived anions, and their uses
 as ionic conductive materials)

IT 12190-79-3, Cobalt lithium oxide (CoLiO₂)
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (salts of pentacyclic or tetrapentalene derived anions, and their uses
 as ionic conductive materials)

IT 210289-36-4P 661461-40-1P 661461-42-3P 661461-49-0P 661461-50-3P
661461-64-9P 661467-44-3P
 RL: DEV (Device component use); PRP (Properties); PUR (Purification or
 recovery); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (salts of pentacyclic or tetrapentalene derived anions, and their uses
 as ionic conductive materials)

IT 13968-08-6DP, Hydronium, salts
 RL: DEV (Device component use); PRP (Properties); RCT (Reactant); SPN
 (Synthetic preparation); TEM (Technical or engineered material use); PREP
 (Preparation); RACT (Reactant or reagent); USES (Uses)
 (salts of pentacyclic or tetrapentalene derived anions, and their uses
 as ionic conductive materials)

IT 289-06-5D, Thiadiazole, anionic derivs. 289-95-2D, Pyrimidine, anionic
 derivs. 290-37-9D, Pyrazine, anionic derivs. 7439-93-2, Lithium, uses
11120-54-0D, Oxadiazole, anionic derivs.
 RL: DEV (Device component use); TEM (Technical or engineered material
 use); USES (Uses)
 (salts of pentacyclic or tetrapentalene derived anions, and their uses
 as ionic conductive materials)

IT 124-38-9, Carbon dioxide, formation (nonpreparative)
 RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
 (salts of pentacyclic or tetrapentalene derived anions, and their uses
 as ionic conductive materials)

IT 7447-40-7, Potassium chloride, reactions
 RL: FMU (Formation, unclassified); RCT (Reactant); REM (Removal or
 disposal); FORM (Formation, nonpreparative); PROC (Process); RACT
 (Reactant or reagent)
 (salts of pentacyclic or tetrapentalene derived anions, and their uses
 as ionic conductive materials)

IT 554-68-7, Triethylammonium chloride 2624-17-1, Sodium
 isocyanurate 4128-37-4 7492-68-4, Copper carbonate 7727-37-9,
 Nitrogen, processes 14075-53-7, Potassium tetrafluoroborate
63872-66-2, 1,4-Diazabicyclo[2.2.2]octane, hydrochloride
 RL: FMU (Formation, unclassified); REM (Removal or disposal); FORM
 (Formation, nonpreparative); PROC (Process)
 (salts of pentacyclic or tetrapentalene derived anions, and their uses
 as ionic conductive materials)

IT 56664-66-5
 RL: MOA (Modifier or additive use); RCT (Reactant); RACT (Reactant or
 reagent); USES (Uses)
 (salts of pentacyclic or tetrapentalene derived anions, and their uses
 as ionic conductive materials)

IT 123-91-1, Dioxane, uses 7487-88-9, Magnesium sulfate, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (salts of pentacyclic or tetrapentalene derived anions, and their uses
 as ionic conductive materials)

IT 75-38-7D, Vinylidene difluoride, derivs., polymers of 80-62-6D, Methyl
 methacrylate, derivs., polymers of 88-12-0D, derivs., polymers of
107-13-1D, Acrylonitrile, derivs., polymers of
 RL: NUU (Other use, unclassified); TEM (Technical or engineered material
 use); USES (Uses)
 (salts of pentacyclic or tetrapentalene derived anions, and their uses
 as ionic conductive materials)

IT 210289-57-9P
 RL: PEP (Physical, engineering or chemical process); PUR (Purification or recovery); PYP (Physical process); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); RACT (Reactant or reagent)
 (salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 210289-51-3P
 RL: PRP (Properties); PUR (Purification or recovery); SPN (Synthetic preparation); PREP (Preparation)
 (salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 661461-51-4P
 RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 67-56-1, Methanol, uses
 RL: PRP (Properties); RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
 (salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 210469-91-3P 661461-52-5P
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
 (salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 210470-01-2P
 RL: PUR (Purification or recovery); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 709-62-6P 7343-34-2P, 3,5-Dimethyl-1H-1,2,4-triazole
25979-00-4P 210289-29-5P 210289-38-6P 210289-49-9P 210289-52-4P
210469-88-8P 210469-95-7P 661461-45-6P 661461-57-0P 661461-60-5P
 RL: PUR (Purification or recovery); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 100-06-1P, p-Acetyl anisole 210289-48-8P 661461-44-5P 661461-53-6P
661461-55-8P 661461-56-9P 661467-37-4P
 RL: PUR (Purification or recovery); SPN (Synthetic preparation); PREP (Preparation)
 (salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 76-05-1, reactions 78-94-4, Methyl vinyl ketone, reactions 94-41-7
98-88-4, Benzoyl chloride 100-52-7, Benzaldehyde, reactions
100-66-3, Anisole, reactions 102-52-3, 1,1,3,3-Tetramethoxypropane
106-20-7, Di-2-ethylhexylamine 108-24-7, Acetic anhydride 109-72-8,
 Butyllithium, reactions 110-61-2, Succinic dinitrile 112-76-5, Stearic acid chloride 121-44-8, Triethylamine, reactions 143-33-9,
 Sodium cyanide 144-55-8, Sodium bicarbonate, reactions 303-04-8,
 2,3-Dichloro-Hexafluoro-2-butene 326-90-9, 4,4,4-Trifluoro-1-(2-furyl)-1,3-butanedione 326-91-0 375-72-4, Perfluorobutanesulfonyl fluoride 407-38-5, 2,2,2-Trifluoroethyl trifluoroacetate 421-83-0, Trifluoromethanesulfonyl chloride 497-19-8, Sodium carbonate, reactions 538-75-0, Dicyclohexylcarbodiimide 542-92-7, Cyclopentadiene, reactions 554-13-2, Lithium carbonate 584-08-7, Potassium carbonate 676-58-4, Methylmagnesium chloride 677-25-8, Ethenesulfonyl fluoride 692-50-2 693-13-0, 1,3-Diisopropylcarbodiimide 764-93-2, 1-Decyne 765-12-8, Triethylene

glycol divinyl ether 917-70-4, Lanthanum acetate 937-14-4,
 3-Chloroperoxybenzoic acid 1000-84-6 1068-57-1, Acetylhydrazide
 1122-28-7, 4,5-Dicyanoimidazole 1310-58-3, Potassium hydroxide,
 reactions 1522-22-1, Hexafluoroacetylacetone 1643-19-2,
 Tetrabutylammonium bromide 1648-99-3 2094-98-6,
 1,1'-Azobis(cyclohexanecarbonitrile) 2582-30-1, 1-Aminoguanidine
 bicarbonate 2633-67-2, 4-Styrenesulfonyl chloride 2638-94-0,
 4,4'-Azobis(4-cyanovaleric acid) 2893-78-9, Dichloroisocyanuric acid,
 sodium salt 3804-23-7, Scandium acetate 4546-95-6,
 1,2,3-Triazole-4,5-dicarboxylic acid 7447-41-8, Lithium chloride
 , reactions 7647-01-0, Hydrochloric acid, reactions 7647-14-5, Sodium
 chloride, reactions 7664-39-3, Hydrofluoric acid, reactions
 7757-82-6, Sodium sulfate, reactions 7758-09-0, Potassium nitrite
 7782-50-5, Chlorine, reactions 7789-23-3, Potassium fluoride
 9002-92-0, Brij 30 13360-57-1 13637-84-8, Chlorosulfonyl
 fluoride 13781-67-4, 2-(3-Thienyl)ethanol 14635-75-7,
 Nitrosonium tetrafluoroborate 16090-14-5 17455-13-9, 18-Crown-6
 17587-22-3, 1,1,1,2,2,3,3-Heptafluoro-7,7-dimethyl
 -4,6-octanedione 20583-66-8, 1,1,1,5,5,6,6,7,7,7-Decafluoro-2,4-
 Heptanedione 26628-22-8, Sodium azide 27070-49-1,
 1,2,3-Triazole 31469-15-5, 1-Methoxy-1-(trimethylsilyloxy)-2-methyl-1-
 propene 39262-22-1 39377-49-6, Copper cyanide 53188-07-1, Trolox
 56512-49-3, 4-(Dimethylamino)azobenzene-4'-sulfonyl chloride
 65039-09-0, 1-Ethyl-3-methyl-1H-imidazolium chloride
 66051-48-7 77968-17-3 81850-46-6 81850-47-7 89183-45-9,
 Polyaniline hydrochloride 210049-00-6 210289-26-2 210289-55-7
 210469-93-5 661461-58-1 661461-61-6

RL: RCT (Reactant); RACT (Reactant or reagent)

(salts of pentacyclic or tetrapentalene derived anions, and their uses
as ionic conductive materials)

IT 7081-78-9P, 1-Chloro-1-ethoxyethane 14694-34-9P 210289-23-9P
 210289-24-0P 210289-27-3P 210289-28-4P 210289-33-1P 210289-34-2P
 210289-35-3P 210469-96-8P 210470-00-1P 661461-47-8P 661461-59-2P
 661467-33-0P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
(Reactant or reagent)

(salts of pentacyclic or tetrapentalene derived anions, and their uses
as ionic conductive materials)

IT 1333-74-0, Hydrogen, uses
 RL: RCT (Reactant); TEM (Technical or engineered material use); RACT
(Reactant or reagent); USES (Uses)
 (salts of pentacyclic or tetrapentalene derived anions, and their uses
as ionic conductive materials)

IT 58649-05-1P 107740-92-1P 159699-92-0P 210289-25-1P 210469-94-6P
 661461-39-8P 661461-41-2P 661461-46-7P 661461-48-9P 661465-23-2P
 661467-34-1P 661467-35-2P 661467-36-3P 661467-38-5P 661467-39-6DP,
 tetraalkylammonium salts

RL: SPN (Synthetic preparation); PREP (Preparation)
 (salts of pentacyclic or tetrapentalene derived anions, and their uses
as ionic conductive materials)

IT 100-42-5D, Styrene, 5-membered ring- contg. derivs.
 RL: TEM (Technical or engineered material use); USES (Uses)
 (salts of pentacyclic or tetrapentalene derived anions, and their uses
as ionic conductive materials)

IT 126-33-0D, Sulfolane, derivs.
 RL: NUU (Other use, unclassified); USES (Uses)
 (solvent for title compds.; salts of pentacyclic or tetrapentalene
derived anions, and their uses as ionic conductive materials)

IT 156118-35-3DP, 2-(5-cyano-1,3,4-triazole)-4,4-difluorobutyl-, lithium salt
 RL: PUR (Purification or recovery); SPN (Synthetic preparation); PREP

(Preparation)

(surfactant and antistatic; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

L3 ANSWER 2 OF 10 CAPLUS COPYRIGHT 2005 ACS on STN

| Full Text | Citing References |
|-----------|-------------------|
|-----------|-------------------|

AN 2003:454898 CAPLUS

DN 139:39126

ED Entered STN: 13 Jun 2003

TI Nonaqueous electrolytes for lithium primary and secondary batteries

IN Barbarich, Thomas J.

PA Yardney Technical Products, Inc., USA

SO U.S. Pat. Appl. Publ., 15 pp.

CODEN: USXXCO

DT Patent

LA English

IC ICM H01M010-40

ICS H01M004-58; H01M004-60

INCL 429324000; 429231950; 429231400; 429213000; 429303000; 429307000;
429338000; 429342000; 429332000; 429333000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----------------------|------|----------|-----------------|----------|
| PI US 2003108800 | A1 | 20030612 | US 2002-289784 | 20021107 |
| US 6852446 | B2 | 20050208 | | |
| PRAI US 2001-347083P | P | 20011109 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---------------|-------|---|
| US 2003108800 | ICM | H01M010-40 |
| | ICS | H01M004-58; H01M004-60 |
| | INCL | 429324000; 429231950; 429231400; 429213000; 429303000;
429307000; 429338000; 429342000; 429332000; 429333000 |
| US 2003108800 | NCL | 429/324.000 |

OS MARPAT 139:39126

AB A nonaq. elec. current producing electrochem. cell is provided comprising an anode and a cathode, an ionically permeable separator interposed between the anode and the cathode, and a nonaq. electrolyte, the electrolyte comprising an ionically conducting salt in a nonaq. medium, the ionically conducting salt corresponding to the formula:
 $M+(Z^*(J^*)^j(X^*)^x)^-$, wherein: M is a lithium atom, Z* is an anion group contg. two or more Lewis basic sites and comprising less than 50 atoms not including hydrogen atoms, J* independently each occurrence is a Lewis acid coordinated to at least one Lewis basic site of Z*, and optionally two or more such J* groups may be joined together in a moiety having multiple Lewis acidic functionality, X* independently each occurrence is selected from the group consisting of H, C1-4 alkyl, alkoxide, halide and mixts. thereof, j is an integer from 2 to 12, and x is an integer from 0 to 4.

ST lithium battery nonaq electrolyte

IT Polymers, uses

RL: DEV (Device component use); USES (Uses)
(gels; nonaq. electrolytes for lithium primary and secondary batteries)

IT Chalcogenides

Oxides (inorganic), uses

RL: DEV (Device component use); USES (Uses)
(lithiated; nonaq. electrolytes for lithium primary and secondary batteries)

IT Primary batteries

Secondary batteries
 (lithium; nonaq. electrolytes for lithium primary and secondary batteries)

IT Glass, uses
 RL: DEV (Device component use); USES (Uses)
 (membrane; nonaq. electrolytes for lithium primary and secondary batteries)

IT Battery electrolytes
 Ionic conductivity
 Polar solvents
 (nonaq. electrolytes for lithium primary and secondary batteries)

IT Esters, uses
 Ethers, uses
 Lactones
 Nitriles, uses
 Polyanilines
 Sulfones
 Transition metal chalcogenides
 Transition metal oxides
 RL: DEV (Device component use); USES (Uses)
 (nonaq. electrolytes for lithium primary and secondary batteries)

IT Disulfides
 RL: DEV (Device component use); USES (Uses)
 (org., redox polymers; nonaq. electrolytes for lithium primary and secondary batteries)

IT Transition metal compounds
 RL: DEV (Device component use); USES (Uses)
 (oxysulfides; nonaq. electrolytes for lithium primary and secondary batteries)

IT Lithium alloy, base
 RL: DEV (Device component use); USES (Uses)
 (nonaq. electrolytes for lithium primary and secondary batteries)

IT 7440-44-0, Carbon, uses
 RL: DEV (Device component use); USES (Uses)
 (mesocarbon microbeads; nonaq. electrolytes for lithium primary and secondary batteries)

IT 57-12-5, Cyanide, uses 60-29-7, Diethyl ether, uses 96-48-0,
γ-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane 120-73-0D, Purine, derivs. 504-66-5D, Dicyanamide, derivs. 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 646-06-0, Dioxolane 7439-93-2, Lithium, uses 7439-93-2D, Lithium, intercalation compd. 14343-69-2, Azide 17655-31-1, Amide 17997-24-9D, Methanetricarbonitrile, ion(1-), derivs. 25233-30-1, Polyaniline 25948-29-2, Carbon disulfide homopolymer 28737-40-8D, Squarate ion(2-), derivs. 32178-55-5D, Benzimidazolide, derivs. 34512-21-5D, derivs. 36954-03-7D, Imidazole anion, derivs. 39448-96-9, Graphite lithium 51719-91-6D, derivs. 64544-32-7D, derivs. 68146-66-7D, derivs. 81425-01-6D, derivs. 217309-42-7, Copper lithium nickel oxide Cu0.2LiNi0.8O2 261356-47-2D, Borate(1-), tetrakis(cyano-κC)-, derivs. 519040-72-3 527685-88-7 527685-89-8 527685-90-1 527685-91-2 527685-92-3 527685-93-4 527685-94-5 527685-95-6 527685-96-7 527685-98-9 527686-01-7 527686-04-0 527686-06-2 527686-08-4 541502-73-2D, derivs. 541502-74-3D, derivs.
 RL: DEV (Device component use); USES (Uses)
 (nonaq. electrolytes for lithium primary and secondary batteries)

IT 55986-39-5P, Lithium imidazolide 148505-26-4P 464194-97-6P
519040-73-4P 519040-74-5P 519040-75-6P 527685-86-5P 527685-87-6P
527686-13-1P 527686-16-4P

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(nonaqueous electrolytes for lithium primary and secondary batteries)

IT 9002-88-4, Polyethylene

RL: DEV (Device component use); USES (Uses)

(separator; nonaqueous electrolytes for lithium primary and secondary batteries)

RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Anon; JP 2002260734 2002 CAPLUS

(2) LaPointe; US 6395671 B2 2002 CAPLUS

(3) Lapointe; J. Am. Chem. Soc. 2000, V122, P9560 CAPLUS

(4) Lee; US 6022643 A 2000 CAPLUS

(5) Lee; J. Electrochem. Soc. 1998, V145(8), P2813 CAPLUS

(6) Sun; Journal of the Electrochemical Society 1999, V146(10), P3655 CAPLUS

L3 ANSWER 3 OF 10 CAPLUS COPYRIGHT 2005 ACS on STN

| | |
|-----------|-------------------|
| Full Text | Citing References |
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AN 2001:301013 CAPLUS

DN 134:304215

ED Entered STN: 27 Apr 2001

TI Method for depositing nanolaminate thin films on sensitive surfaces

IN Elers, Kai-Erik; Haukka, Suvi P.; Saanila, Ville Antero; Kaipio, Sari Johanna; Soininen, Pekka Juha

PA Asm America, Inc., USA

SO PCT Int. Appl., 53 pp.

CODEN: PIXXD2

DT Patent

LA English

IC H01L021-768; H01L021-285; C23C016-00

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 75

FAN.CNT 8

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|---|------|----------|------------------------|----------|
| PI | <u>WO 2001029893</u> | A1 | 20010426 | <u>WO 2000-US28654</u> | 20001016 |
| | W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH,
CN, CR, CU, CZ, CZ, DE, DE, DK, DK, DM, DZ, EE, EE, ES, FI, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,
KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX,
MZ, NO, NZ
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ,
CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG | | | | |
| | <u>FI 9902233</u> | A | 20010416 | <u>FI 1999-2233</u> | 19991015 |
| | <u>FI 9902234</u> | A | 20010416 | <u>FI 1999-2234</u> | 19991015 |
| | <u>FI 9902235</u> | A | 20010416 | <u>FI 1999-2235</u> | 19991015 |
| | <u>FI 2000000564</u> | A | 20010416 | <u>FI 2000-564</u> | 20000310 |
| | <u>EP 1221178</u> | A1 | 20020710 | <u>EP 2000-973583</u> | 20001016 |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO, MK, CY, AL | | | | |
| | <u>JP 2003524888</u> | T2 | 20030819 | <u>JP 2001-531142</u> | 20001016 |
| | <u>US 6902763</u> | B1 | 20050607 | <u>US 2002-49125</u> | 20001016 |
| | <u>US 2002187256</u> | A1 | 20021212 | <u>US 2002-210715</u> | 20020730 |
| | <u>US 6821889</u> | B2 | 20041123 | | |
| | <u>US 2003031807</u> | A1 | 20030213 | <u>US 2002-246131</u> | 20020917 |
| | <u>US 6800552</u> | B2 | 20041005 | | |
| | <u>US 2005106877</u> | A1 | 20050519 | <u>US 2004-969297</u> | 20041019 |
| | <u>US 2005064098</u> | A1 | 20050324 | <u>US 2004-990424</u> | 20041116 |

| | | | |
|------|------------------------|----|----------|
| PRAI | <u>FI 1999-2233</u> | A | 19991015 |
| | <u>FI 1999-2234</u> | A | 19991015 |
| | <u>FI 1999-2235</u> | A | 19991015 |
| | <u>US 1999-175799P</u> | P | 19991015 |
| | <u>US 2000-176948P</u> | P | 20000118 |
| | <u>FI 2000-564</u> | A | 20000310 |
| | <u>US 1999-159799P</u> | P | 19991015 |
| | <u>US 2000-687204</u> | A1 | 20001013 |
| | <u>US 2000-687205</u> | A1 | 20001013 |
| | <u>WO 2000-US28654</u> | W | 20001016 |
| | <u>US 2002-210715</u> | A1 | 20020730 |

| CLASS | PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|-------|----------------------|-------|--|
| | <u>WO 2001029893</u> | IC | H01L021-768IC H01L021-285IC C23C016-00 |
| | <u>WO 2001029893</u> | ECLA | C23C016/32; C23C016/44; C23C016/44A; C30B025/02+29/02; C30B025/02+29/36; C30B029/02; C30B029/36; C30B029/38; H01L021/285B4L; H01L021/768C3; H01L021/768C4 |
| | <u>FI 9902233</u> | ECLA | C23C016/32; C23C016/34; C23C016/44; C23C016/44A; C30B025/02+29/02; C30B025/02+29/36; C30B029/02; C30B029/36; C30B029/38; H01L021/285B4L; H01L021/768C3; H01L021/768C4 |
| | <u>FI 9902234</u> | ECLA | C23C016/32; C23C016/34; C23C016/44; C23C016/44A; C30B025/02+29/02; C30B025/02+29/36; C30B025/02+29/38; C30B029/02; C30B029/36; C30B029/38; H01L021/285B4L; H01L021/768C3; H01L021/768C4 |
| | <u>FI 2000000564</u> | ECLA | C23C016/32; C23C016/34; C23C016/44; C23C016/44A; C30B025/02+29/02; C30B025/02+29/36; C30B025/02+29/38; C30B029/02; C30B029/36; C30B029/38; H01L021/285B4L; H01L021/768C3; H01L021/768C4 |
| | <u>EP 1221178</u> | ECLA | C23C016/32; C23C016/44; C23C016/44A; C30B025/02+29/02; C30B025/02+29/36; C30B029/02; C30B029/36; C30B029/38; H01L021/285B4L; H01L021/768C3; H01L021/768C4 |
| | <u>US 6902763</u> | NCL | 427/250.000; 427/252.000; 427/255.150; 427/255.230; 427/255.260; 427/255.280; 427/255.390; 427/255.700 |
| | <u>US 2002187256</u> | ECLA | C30B025/02; C30B029/02; C30B029/36; C30B029/38 |
| | <u>US 2002187256</u> | NCL | 427/096.800 |
| | | ECLA | C23C016/02H; C23C016/04D; C23C016/08; C23C016/32; C23C016/34; C23C016/44; C23C016/44A; C30B025/02+29/02; C30B025/02+29/36; C30B025/02+29/38; C30B025/14; C30B029/02; C30B029/36; C30B029/38; H01L021/285B4H2; H01L021/285B4L; H01L021/768B2D; H01L021/768C; H01L021/768C3; H01L021/768C4; H01L023/522E; H01L023/532M1A4; H01L023/532M1C; H01L023/532M1C4; H01L023/532M1N; H01L023/532M1N4; H01L023/532N; H01L023/532N4 |
| | <u>US 2003031807</u> | NCL | 427/569.000 |
| | | ECLA | C23C016/02H; C23C016/04D; C23C016/08; C23C016/32; C23C016/34; C23C016/44; C23C016/44A; C30B025/02+29/02; C30B025/02+29/36; C30B025/02+29/38; C30B029/02; C30B029/36; C30B029/38; H01L021/285B4H2; H01L021/285B4L; H01L021/768B2D; H01L021/768C; H01L021/768C3; H01L021/768C4; H01L023/522E; H01L023/532M1A4; H01L023/532M1C4; H01L023/532M1N; H01L023/532M1N4; H01L023/532N; H01L023/532N4 |
| | <u>US 2005106877</u> | NCL | 438/689.000 |
| | | ECLA | C23C016/32; C23C016/34; C23C016/44; C23C016/44A; C30B025/02+29/02; C30B025/02+29/36; C30B025/02+29/38; C30B029/02; C30B029/36; C30B029/38; H01L021/285B4L; H01L021/768C3; H01L021/768C4 |

US 2005064098 NCL 427/250.000
 ECLA C23C016/02H; C23C016/04D; C23C016/08; C23C016/32;
 C23C016/34; C23C016/44; C23C016/44A; C30B025/02+29/02;
 C30B025/02+29/36; C30B025/02+29/38; C30B025/14;
 C30B029/02; C30B029/36; C30B029/38; H01L021/285B4H2;
 H01L021/285B4L; H01L021/768B2D; H01L021/768C;
 H01L021/768C3; H01L021/768C4; H01L023/522E;
 H01L023/532M1A4; H01L023/532M1C4; H01L023/532M1N;
 H01L023/532M1N4; H01L023/532N; H01L023/532N4

AB The present method provides tools for growing conformal metal nitride, metal carbide and metal thin films, and nanolaminate structures incorporating these films, from aggressive chems. The amt. of corrosive chem. compds., such as H halides, is reduced during the deposition of transition metal, transition metal carbide and transition metal nitride thin films on various surfaces, such as metals and oxides. Getter compds. protect surfaces sensitive to H halides and NH₄⁺ halides, such as Al, Cu, Si oxide and the layers being deposited, against corrosion. Nanolaminate structures incorporating metal nitrides, such as Ti nitride and W nitride, and metal carbides, and methods for forming the same, are also disclosed.

ST depositing transition metal carbide nitride nanolaminate film sensitive surface

IT Monolayers
 (chemisorption; depositing transition metal, transition metal carbide, transition metal nitride nanolaminate thin films on sensitive surfaces)

IT Interconnections (electric)
 (copper and aluminum; depositing transition metal, transition metal carbide, transition metal nitride nanolaminate thin films on sensitive surfaces)

IT Electrodeposition
 (copper film; depositing transition metal, transition metal carbide, transition metal nitride nanolaminate thin films on sensitive surfaces)

IT Atomic layer epitaxy
 Gettering
 (depositing transition metal, transition metal carbide, transition metal nitride nanolaminate thin films on sensitive surfaces)

IT Hydrogen halides
 RL: BYP (Byproduct); PREP (Preparation)
 (depositing transition metal, transition metal carbide, transition metal nitride nanolaminate thin films on sensitive surfaces)

IT Transition metal carbides
 Transition metal nitrides
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (depositing transition metal, transition metal carbide, transition metal nitride nanolaminate thin films on sensitive surfaces)

IT Integrated circuits
 (fabrication of; depositing transition metal, transition metal carbide, transition metal nitride nanolaminate thin films on sensitive surfaces)

IT Chemisorption
 (monolayer; depositing transition metal, transition metal carbide, transition metal nitride nanolaminate thin films on sensitive surfaces)

IT Films

(multilayer, thin; depositing transition metal, transition metal carbide, transition metal nitride nanolaminate thin films on sensitive surfaces)

IT Laminated materials
 (nano-; depositing transition metal, transition metal carbide, transition metal nitride nanolaminate thin films on sensitive surfaces)

IT Corrosion
 (on sensitive surfaces; depositing transition metal, transition metal carbide, transition metal nitride nanolaminate thin films on sensitive surfaces)

IT Vapor deposition process
 (plasma, copper or silica film; depositing transition metal, transition metal carbide, transition metal nitride nanolaminate thin films on sensitive surfaces)

IT 7429-90-5, Aluminum, processes 7440-50-8, Copper, processes
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (conductive films; depositing transition metal, transition metal carbide, transition metal nitride nanolaminate thin films on sensitive surfaces)

IT 25583-20-4, Titanium nitride (TiN) 37359-53-8, Tungsten nitride
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (depositing transition metal, transition metal carbide, transition metal nitride nanolaminate thin films on sensitive surfaces)

IT 7647-01-0P, Hydrogen chloride, preparation 7664-39-3P,
 Hydrogen fluoride, preparation 12125-01-8P, Ammonium fluoride
 RL: BYP (Byproduct); PREP (Preparation)
 (deposition byproducts; depositing transition metal, transition metal carbide, transition metal nitride nanolaminate thin films on sensitive surfaces)

IT 7550-45-0, Titanium tetrachloride, processes 7664-41-7, Ammonia, processes 7783-82-6, Tungsten hexafluoride
 RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (deposition gas reactants; depositing transition metal, transition metal carbide, transition metal nitride nanolaminate thin films on sensitive surfaces)

IT 11105-01-4, Silicon oxynitride 11130-73-7, Tungsten carbide
12033-62-4, Tantalum nitride 12033-89-5, Silicon nitride, processes
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (diffusion barrier; depositing transition metal, transition metal carbide, transition metal nitride nanolaminate thin films on sensitive surfaces)

IT 74-85-1, Ethene, processes 74-89-5, Methyl amine, processes 75-24-1, Trimethylaluminum 97-94-9, Triethyl boron 631-36-7, Tetraethyl silicon 7782-65-2, Germane 7803-62-5, Silane, processes 12152-72-6, Cyclohexadieneiron tricarbonyl 12189-86-5, Ferrocene, 1,1'-bis(trimethylsilyl)- 13283-31-3, Borane, processes 19287-45-7, Diborane
 RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (gettering agents; depositing transition metal, transition metal carbide, transition metal nitride nanolaminate thin films on sensitive surfaces)

IT 109-89-7, Diethylamine, processes 121-44-8, Triethylamine, processes

302-01-2, Hydrazine, processes 624-90-8, Methyl azide
 7782-79-8, Hydrogen azide 19624-22-7, Pentaborane (B5H9)
 30260-66-3, Dimethyl hydrazine 186958-04-3, Nitrogen
 fluoride
 RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (second source materials; depositing transition metal
 , transition metal carbide, transition
 metal nitride nanolaminate thin films on sensitive surfaces)

IT 78-10-4, TEOS
 RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (silica precursor; depositing transition metal,
 transition metal carbide, transition
 metal nitride nanolaminate thin films on sensitive surfaces)

IT 7440-21-3, Silicon, processes
 RL: DEV (Device component use); PEP (Physical, engineering or chemical
 process); PROC (Process); USES (Uses)
 (substrate; depositing transition metal,
 transition metal carbide, transition
 metal nitride nanolaminate thin films on sensitive surfaces)

IT 7631-86-9, Silica, processes
 RL: DEV (Device component use); PEP (Physical, engineering or chemical
 process); PROC (Process); USES (Uses)
 (thin films; depositing transition metal,
 transition metal carbide, transition
 metal nitride nanolaminate thin films on sensitive surfaces)

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Bushnell, P; US 5947710 A 1999
 (2) Genus Inc; WO 0054320 A 2000 CAPLUS
 (3) Hultman, L; ZEITSCHRIFT FUR METALLKUNDE 1999, V90(10), P803 CAPLUS
 (4) Sherman, A; US 5916365 A 1999 CAPLUS

L3 ANSWER 4 OF 10 CAPLUS COPYRIGHT 2005 ACS on STN

| Full Text | Citing References |
|---|-------------------|
| AN 2000:862646 CAPLUS | |
| DN 134:246527 | |
| ED Entered STN: 11 Dec 2000 | |
| TI Iron, cobalt and vanadium complexes of the N(CH ₂ CH ₂ S) ₃ - ligand with chloride, azide, cyanide and carbonyl co-ligands | |
| AU Davies, Sian C.; Durrant, Marcus C.; Hughes, David L.; Richards, Raymond L.; Sanders, J. Roger | |
| CS Department of Biological Chemistry, John Innes Centre, Norwich, NR4 7UH, UK | |
| SO Dalton (2000), (24), 4694-4701
CODEN: DALTFG | |
| PB Royal Society of Chemistry | |
| DT Journal | |
| LA English | |
| CC 78-7 (Inorganic Chemicals and Reactions)
Section cross-reference(s): 75 | |
| OS CASREACT 134:246527 | |
| AB Reaction of [Fe(acac) ₃], Et ₄ NCl and N(CH ₂ CH ₂ SH) ₃ (NS ₃ H ₃) in MeCN gave [Et ₄ N][FeCl(NS ₃)] (1) and after metathesis the azide [Et ₄ N][Fe(N ₃)(NS ₃)] (2), but reaction of [Fe(acac) ₃], R ₄ NOAc and NS ₃ H ₃ in MeCN gave [R ₄ N][Fe ₄ (NS ₃) ₃] (R = Et, 3; Me, 4). Complex 1 is reduced under various conditions giving R'[Fe(NS ₃)] (R' = Et ₄ N, 5; Tl, 6; N ₂ H ₅ , 7) which probably contain sulfur-bridged [{Fe(NS ₃) _n } _n ⁻ anions. Under CO, 1 is reduced to the paramagnetic [Et ₄ N][Fe(NS ₃)(CO)] (8) from which Tl[Fe(NS ₃)(CO)] (9) may be made by metathesis. Compd. 8 reacts with metal | |

chlorides in acetonitrile giving trinuclear $[M\{Fe(NS_3)(CO)\}_2-S,S']$ ($M = Fe, 10; Co, 11$). The above complexes were characterized by microanal., IR and Mossbauer spectra and magnetic measurements; crystal structure detns. were carried out on 1, 2, 8, 10, and 11. The properties of the anions of 1 and 8 and of the hypothetical anions $[Fe(NS_3)]^-$ and $[Fe(N_2)(NS_3)]^-$ were studied by d. functional theory calcns. Compds. 8 and 10 have $\nu(CO)$ in the range $1960-1880 \text{ cm}^{-1}$ and model aspects of carbon monoxide binding to the cofactor of nitrogenase. Related cyanide complexes $[Et_4N][M(NS_3)(CN)]$ ($M = Co, 12; V, 13$) were characterized, 12 by x-ray anal.

ST crystal structure iron cobalt nitrilotriethanethiolato complex; nitrilotriethanethiolate transition metal complex prepn structure; iron nitrilotriethanethiolato complex prepn structure; cobalt nitrilotriethanethiolato complex prepn structure; vanadium nitrilotriethanethiolato complex prepn

IT Binding energy
(DFT calcns. of optimized mol. structure and binding energy of iron thiolato and nitrilotriethanethiolato complexes)

IT Transition metal complexes
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(amino thiol, nitrilotriethanethiol; prepn. and crystal and mol. structure of iron, cobalt and vanadium nitrilotriethanethiolato complexes)

IT Thiols (organic), preparation
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(amino, transition metal complexes,
nitrilotriethanethiol; prepn. and crystal and mol. structure of iron, cobalt and vanadium nitrilotriethanethiolato complexes)

IT Crystal structure
Molecular structure
(of iron and cobalt nitrilotriethanethiolato complexes)

IT Molecular structure
(optimized; DFT calcns. of optimized mol. structure and binding energy of iron thiolato and nitrilotriethanethiolato complexes)

IT 220024-65-7 329967-90-0 329968-03-8 329968-05-0 329968-07-2
329968-09-4 329968-13-0
RL: PRP (Properties)
(DFT calcns. of optimized mol. structure and binding energy in study of iron nitrilotriethanethiolato complexes)

IT 220024-67-9P 329967-88-6P 329967-97-7P 329967-99-9P
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(prep. and crystal and mol. structure)

IT 4201-86-9DP, 2,2',2'''-Nitrilotriethanethiol, iron trinuclear complexes
7439-89-6DP, Iron, nitrilotriethanethiol trinuclear complexes, preparation
291748-87-3P 329967-91-1P 329967-93-3P 329967-94-4P 329967-96-6P
RL: SPN (Synthetic preparation); PREP (Preparation)
(prep. of)

IT 220024-64-6P
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prep., crystal and mol. structure and metathesis and redn. reactions)

IT 220024-66-8P
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prep., crystal and mol. structure and reactions)

IT 18909-92-7, Bis(acetonitrile)dichlorocobalt 21679-46-9,
Tris(acetylacetonato)cobalt 87114-91-8, Bis(acetonitrile)dichloroiron
193409-25-5 329968-00-5, Dichlorotris(dimethyl sulfoxide)iron
RL: RCT (Reactant); RACT (Reactant or reagent)
(reactant for prep. of transition metal nitrilotriethanethiolato complex)

IT 4201-86-9, 2,2',2'''-Nitrilotriethanethiol 14024-18-1,
 Tris(acetylacetonato)iron
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reactant for prepn. of transition metal
 nitrilotriethanethiolato complexes)

RE.CNT 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD

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L3 ANSWER 5 OF 10 CAPLUS COPYRIGHT 2005 ACS on STN

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Text | Citing
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| AN | 2000:690434 | CAPLUS |
| DN | 134:17149 | |
| ED | Entered STN: | 01 Oct 2000 |
| TI | Asymmetric cyclopropanation of vinyl fluorides: access to enantiopure monofluorinated cyclopropane carboxylates | |
| AU | Meyer, Oliver G. J.; Frohlich, Roland; Haufe, Gunter | |
| CS | Organisch-Chemisches Institut, Westfälische Wilhelms-Universität Münster, Münster, D-48149, Germany | |
| SO | Synthesis (2000), (10), 1479-1490 | |
| | CODEN: SYNTBF; ISSN: 0039-7881 | |
| PB | Georg Thieme Verlag | |
| DT | Journal | |
| LA | English | |
| CC | 21-2 (General Organic Chemistry)
Section cross-reference(s): 67, 75 | |
| OS | CASREACT 134:17149 | |

AB The transition metal catalyzed cyclopropanation with alkyl diazoacetates of aliph. or arom. vinyl **fluorides**, prep'd. from the corresponding alkenes by bromofluorination and subsequent dehydrobromination, provides a smooth access to racemic 1:1 mixts. of cis/trans isomeric monofluorinated cyclopropanecarboxylates. The application of enantiopure bis(oxazoline) ligands and Cu(I) triflate makes the reaction trans-diastereoselective and enantioselective. For example, treatment of α -fluorostyrene with tert-Bu diazoacetate in the presence of 2 mol% of the catalyst prep'd. from (S)-tert-leucine-based 2,2-bis(4-tert-butyl-2-oxazolin-2-yl)propane and CuOTf gave a 4:1 mixt. of trans-2-fluoro-2-phenylcyclopropanecarboxylate (4e) with 93% ee and the corresponding cis-isomer 5e with 89% ee. The abs. configuration of the trans-isomer 4e is (1S,2S) by x-ray structure anal. of a deriv.

ST crystal structure fluorocyclopropanecarboxylic acid amide; mol structure fluorocyclopropanecarboxylic acid amide; asym cyclopropanation vinyl fluoride copper oxazoline complex catalysis; cycloaddn alkyl diazoacetate vinyl fluoride

IT Crystal structure
Molecular structure
(of fluorocyclopropanecarboxylic acids and amide)

IT Candida cylindracea
(stereoselective hydrolysis of fluorocyclopropanecarboxylic ester catalyzed by)

IT Cyclopropanation catalysts
(stereoselective; copper-oxazoline-deriv. complexes for [2+1]-cycloaddn. of vinyl **fluorides** with alkyl diazoacetates)

IT Hydrolysis
(stereoselective; of fluorocyclopropanecarboxylic ester in presence of Candida rugosa)

IT Cyclopropanation
(stereoselective; of vinyl **fluorides** using alkyl diazoacetates in presence of copper-oxazoline-deriv. complexes)

IT 131833-92-6, 2,2-Bis((S)-4-isopropyl-2-oxazolin-2-yl)propane
131833-93-7, 2,2-Bis((S)-4-tert-butyl-2-oxazolin-2-yl)propane
180036-68-4, (4R,5R)-4,5-Bis((S)-4-isopropyl-2-oxazolin-2-yl)-2,2-dimethyl-1,3-dioxolane
RL: CAT (Catalyst use); USES (Uses)
(asym. cyclopropanation of vinyl **fluorides** by alkyl diazoacetates catalyzed by copper triflate and)

IT 309242-41-9P 309242-42-0P 309242-43-1P 309242-44-2P
RL: SPN (Synthetic preparation); PREP (Preparation)
(asym. cyclopropanation of vinyl **fluorides** by alkyl diazoacetates catalyzed by copper triflate and oxazoline derivs.)

IT 42152-44-3, Copper(1+) trifluoromethanesulfonate
RL: CAT (Catalyst use); USES (Uses)
(asym. cyclopropanation of vinyl **fluorides** by alkyl diazoacetates catalyzed by oxazoline derivs. and)

IT 63254-50-2, (-)-Menthyl diazoacetate
RL: RCT (Reactant); RACT (Reactant or reagent)
(asym. cyclopropanations of vinyl **fluorides** by alkyl diazoacetate catalyzed by copper triflate and oxazoline deriv.)

IT 106-40-1, 4-Bromoaniline
RL: RCT (Reactant); RACT (Reactant or reagent)
(condensation with fluorocyclopropanecarbonyl chloride)

IT 309242-52-2P 309242-53-3P 309242-54-4P 309242-55-5P 309242-56-6P
309242-57-7P 309242-58-8P
RL: SPN (Synthetic preparation); PREP (Preparation)
(copper-catalyzed asym. cyclopropanation of vinyl **fluorides** by alkyl diazoacetates giving)

IT 13395-16-9, Bis(acetylacetonato)copper

RL: CAT (Catalyst use); USES (Uses)
 (cyclopropanation of vinyl **fluorides** by alkyl diazoacetates
 catalyzed by)

IT 1073-67-2, p-Chlorovinylbenzene
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (for prepn. of 1-(2-bromo-1-fluoroethyl)-4-chlorobenzene)

IT 2158-14-7, p-Acetamidobenzenesulfonyl azide
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (for prepn. of tert-Bu diazoacetate)

IT 100-52-7, Benzaldehyde, reactions 123-11-5, 4-Methoxybenzaldehyde,
 reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (for prepn. of vinyl **fluoride**)

IT 35059-50-8P, tert-Butyl diazoacetate
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)
 (prepn. and asym. cyclopropanations of vinyl **fluorides** by
 alkyl diazoacetate catalyzed by copper triflate and oxazoline deriv.)

IT 309242-37-3P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)
 (prepn. and attempted hydrolysis in presence of lipases)

IT 309242-46-4P
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
 (prepn. and crystal structure of)

IT 20405-77-0P, (E)-1-Fluoro-2-phenylethene 26946-13-4P,
 (E)-1-Fluoro-2-(4-methoxyphenyl)ethene
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)
 (prepn. and cyclopropanation by Et diazoacetate catalyzed by
 copper/rhodium catalysts)

IT 309242-33-9P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)
 (prepn. and lipase-catalyzed stereoselective hydrolysis of)

IT 106263-12-1P, 1-(4-Chlorophenyl)-1-fluoroethene
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)
 (prepn. and sym. and asym. cyclopropanations by alkyl diazoacetates
 catalyzed by copper compds.)

IT 242148-56-7P, 1-(2-Bromo-1-fluoroethyl)-4-chlorobenzene
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)
 (prepn. and use in prepn. of vinyl **fluoride**)

IT 309242-34-0P 309242-35-1P 309242-36-2P 309242-38-4P 309242-39-5P
309242-40-8P 309242-47-5P 309242-48-6P 309242-51-1P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (prepn. of)

IT 309242-45-3P
 RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP
 (Preparation); RACT (Reactant or reagent)
 (prepn., crystal structure, and N-Boc-protected fluorocyclopropylamine)

IT 309242-31-7P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)
 (stereoselective synthesis and acid hydrolysis of)

IT 309242-49-7P, (1R,2R)-2-Fluoro-2-phenylcyclopropanecarboxylic acid
309242-50-0P, (1S,2S)-Ethyl 2-fluoro-2-phenylcyclopropanecarboxylate
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)

(stereoselective synthesis and conversion to amide)

IT 309242-30-6P, (1S,2S)-2-Fluoro-2-phenylcyclopropanecarboxylic
(4-Bromophenyl)amide
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(stereoselective synthesis and crystal structure of)

IT 309242-32-8P
RL: SPN (Synthetic preparation); PREP (Preparation)
(stereoselective synthesis of)

IT 696-31-1, 1-Fluoro-1-phenylethene 14251-63-9, (E)-1-Fluoro-1-phenyl-1-propene 203928-81-8, 2-Fluoro-1-hexene
RL: RCT (Reactant); RACT (Reactant or reagent)
(sym. and asym. cyclopropanations by alkyl diazoacetates catalyzed by copper compds.)

IT 623-73-4, Ethyl diazoacetate
RL: RCT (Reactant); RACT (Reactant or reagent)
(sym. and asym. cyclopropanations of vinyl fluorides by alkyl diazoacetates catalyzed by copper compds.)

RE.CNT 81 THERE ARE 81 CITED REFERENCES AVAILABLE FOR THIS RECORD

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| DN | 132:308843 | |
| ED | Entered STN: | 11 May 2000 |
| TI | Carbene transition metal catalysts for polymerization | |
| IN | Cavell, Ronald G.; Wang, Qinyan; Babu, Ruppa P. Kamlesh; Kasani, Aparna | |
| PA | The Governors of the University of Alberta, Can. | |
| SO | U.S., 17 pp., Cont.-in-part of U.S. Ser. No. 216,041, abandoned. | |
| | CODEN: USXXAM | |
| DT | Patent | |
| LA | English | |
| IC | ICM C08F004-06 | |
| | ICS C08F004-44; C07F009-02 | |
| INCL | 526131000 | |
| CC | 35-3 (Chemistry of Synthetic High Polymers) | |

Section cross-reference(s): 29, 67, 78

FAN CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|-----------------------|------|----------|------------------------|----------|
| PI | <u>US 6060568</u> | A | 20000509 | <u>US 1999-377233</u> | 19990819 |
| | <u>CA 2291527</u> | AA | 20000618 | <u>CA 1999-2291527</u> | 19991203 |
| | <u>US 6313331</u> | B1 | 20011106 | <u>US 2000-513682</u> | 20000225 |
| PRAI | <u>US 1998-216041</u> | B2 | 19981218 | | |
| | <u>US 1999-377233</u> | A | 19990819 | | |

CLASS

| | PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|------------|------------|-------|---|
| US 6060568 | | ICM | C08F004-06 |
| | | ICS | C08F004-44; C07F009-02 |
| | | INCL | 526131000 |
| US 6060568 | | NCL | 526/131.000; 502/103.000; 502/117.000; 526/160.000;
526/161.000; 534/015.000; 556/001.000; 556/018.000;
556/022.000; 556/042.000; 556/052.000; 556/058.000;
556/121.000; 556/140.000 |
| | | ECLA | C07F009/535D; C08F010/00+4/52; C08F010/00+4/659 |
| | | NCL | 556/018.000; 502/103.000; 502/117.000; 526/131.000;
526/160.000; 526/161.000; 534/015.000; 556/001.000;
556/022.000; 556/042.000; 556/052.000; 556/058.000;
556/121.000; 556/140.000 |
| US 6313331 | | ECLA | C07F009/535D; C08F010/00+4/52; C08F010/00+4/659 |

OS MARPAT 132:308843

AB The present invention relates to novel complexes of (transition) metals contg. ligands having phosphorus centers supporting a carbene structure or heteroalkane radical bonded to the (transition) metal. Ethylene was polymd. using [ZrCl₂[C(Ph₂PdNSiMe₃)₂]] and methylaluminoxane catalysts.

ST transition metal carbene complex catalyst olefin polymn

IT Aluminoxanes

RL: CAT (Catalyst use); USES (Uses)
(Me; carbene transition metal catalysts for polymn.)

IT Aluminoxanes

RL: CAT (Catalyst use); USES (Uses)
(activator; carbene transition metal catalysts for polymn.)

IT Polymerization catalysts

(carbene transition metal catalysts for polymn.)

IT Rare earth complexes

Transition metal complexes

RL: CAT (Catalyst use); USES (Uses)
(carbene; carbene transition metal catalysts for polymn.)

IT 1109-15-5, Trispentafluorophenyl boron 118612-00-3, N,N-

Dimethylaniliniumtetrakis(pentafluorophenyl borate 136040-19-2,

Triphenylmethylium tetrakis(pentafluorophenyl borate

RL: CAT (Catalyst use); USES (Uses)

(activator; carbene transition metal catalysts for polymn.)

IT 229957-83-9P 246543-91-9P 258339-13-8P 266001-98-3P 266001-99-4P
266002-03-3P 266002-04-4P 266002-05-5P

RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)

(carbene transition metal catalysts for polymn.)

IT 9002-88-4P, Polyethylene

RL: IMF (Industrial manufacture); PREP (Preparation)

(carbene transition metal catalysts for polymn.)

IT 230969-42-3P 245679-04-3P 246543-89-5P 266001-95-0P 266001-96-1P
266002-00-0P 266002-02-2P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(carbene transition metal catalysts for polymn.)

IT 75-16-1, Methylmagnesium bromide 544-97-8, Zinc dimethyl 591-51-5, Phenyllithium 768-95-6, Tricyclo[3.3.1.13,7]decan-1-ol 773-82-0, Pentafluorobenzonitrile 2071-20-7, Bis(diphenylphosphino)methane 4411-25-0, Adamantyl isocyanate 4648-54-8, Trimethylsilyl azide 21959-01-3 24356-01-2, Zirconium tetrabenzyl 24886-73-5 53380-82-8 70969-28-7 137349-65-6
174749-75-8

RL: RCT (Reactant); RACT (Reactant or reagent)

(carbene transition metal catalysts for polymn.)

RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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- (2) Anon; WO 9623010 1996 CAPLUS
- (3) Becker; US 5534474 1996 CAPLUS
- (4) Cavell; US 09174782 1998
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L3 ANSWER 7 OF 10 CAPLUS COPYRIGHT 2005 ACS on STN

| | |
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| Full | Citing |
| Text | References |

AN 1998:102992 CAPLUS
DN 128:168981
ED Entered STN: 20 Feb 1998
TI Hydroformylation of olefins in a two-phase system, and transition metal diphosphine complexes as catalysts
IN Reetz, Manfred Theodor; Waldvogel, Siegfried
PA Studiengesellschaft Kohle m.b.H., Germany
SO Ger. Offen., 15 pp.
CODEN: GWXXBX
DT Patent
LA German
IC ICM C08B037-16
ICS C07C045-50; C07C047-00
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 23, 29, 67

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|--|------|----------|-------------------------|----------|
| PI | <u>DE 19631322</u> | A1 | 19980205 | <u>DE 1996-19631322</u> | 19960802 |
| | <u>CA 2262561</u> | AA | 19980212 | <u>CA 1997-2262561</u> | 19970729 |
| | <u>WO 9805618</u> | A2 | 19980212 | <u>WO 1997-EP4117</u> | 19970729 |
| | W: CA, JP, US | | | | |
| | RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE | | | | |
| | <u>EP 923521</u> | A2 | 19990623 | <u>EP 1997-941903</u> | 19970729 |
| | <u>EP 923521</u> | B1 | 20010822 | | |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, IT, LI, LU, NL, SE, IE | | | | |

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|------------------------------|----|----------|-----------------------|----------|
| <u>JP 2001506285</u> | T2 | 20010515 | <u>JP 1998-507569</u> | 19970729 |
| <u>AT 204561</u> | E | 20010915 | <u>AT 1997-941903</u> | 19970729 |
| <u>US 6087481</u> | A | 20000711 | <u>US 1999-230575</u> | 19990127 |
| <u>PRAI DE 1996-19631322</u> | A | 19960802 | | |
| <u>WO 1997-EP4117</u> | W | 19970729 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|--------------------|-------|--|
| <u>DE 19631322</u> | ICM | C08B037-16 |
| | ICS | C07C045-50; C07C047-00 |
| <u>DE 19631322</u> | ECLA | C07C045/50; C07C067/347+69/716; C08B037/00M2B |
| <u>WO 9805618</u> | ECLA | C07C045/50; C07C067/347+69/716; C08B037/00M2B |
| <u>US 6087481</u> | NCL | 536/018.700; 536/120.000; 536/123.100; 568/451.000;
568/454.000 |
| | ECLA | C07C045/50; C07C067/347+69/716; C08B037/00M2B |

OS MARPAT 128:168981

AB Aliph. or alicyclic alkenes, either terminal or internal, in an org. phase are hydroformylated in the presence of an aq. phase contg. a catalyst which is a Group VIII metal complex of a β -cyclodextrin deriv. having a $(R_2PCH_2)_2N$ substituent (R = alkyl, aryl) in the 6-position. Thus, β -cyclodextrin was tosylated, converted to the azide, reduced to the amine, and treated with $Ph_2P+(CH_2OH)_2Cl^-$ to give 6A-bis(diphenylphosphinomethyl)amino-6A-desoxy- β -cyclodextrin, which was converted to a Co complex and used in hydroformylation of 1-octene at 60°/100 bars for 18 h, producing aldehyde in 95% yield, with n-/iso- ratio 3.38.

ST cobalt diphosphine complex hydroformylation catalyst; cyclodextrin diphosphine deriv cobalt complex

IT Hydroformylation catalysts
(hydroformylation of olefins with cyclodextrin-linked transition metal diphosphine complexes as catalysts)

IT Hydroformylation
(two-phase; hydroformylation of olefins with transition metal diphosphine complexes as catalysts)

IT 35138-22-8, Bis(1,5-cyclooctadiene)rhodium tetrafluoroborate

RL: CAT (Catalyst use); USES (Uses)
(hydroformylation of olefins with transition metal diphosphine complexes as catalysts)

IT 191103-02-3P
RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(hydroformylation of olefins with transition metal diphosphine complexes as catalysts)

IT 191102-94-0P 191103-03-4P 191103-04-5P 191103-06-7P 202815-44-9P

202845-36-1P 202845-37-2P 202845-38-3P 202924-98-9P

RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(hydroformylation of olefins with transition metal diphosphine complexes as catalysts)

IT 93-53-8P, α -Methylbenzeneacetaldehyde 104-53-0P, Benzenepropanal
111-71-7P, Heptanal 112-44-7P, Undecanal 124-19-6P, Nonanal
872-53-7P, Cyclopentanecarboxaldehyde 925-54-2P, 2-Methylhexanal
926-36-3P, 4,4-Dimethylpentanal 4361-28-8P, Cyclohexanepropanal
5442-00-2P 5664-21-1P, Cyclohexaneethanal 6688-11-5P,
Cyclooctanecarboxaldehyde 7786-29-0P, 2-Methyloctanal 10486-19-8P,
Tridecanal 17206-62-1P, 2-Methylcyclopentanecarboxaldehyde
17408-48-9P, 2,3,3-Trimethylbutanal 19009-56-4P, 2-Methyldecanal
19269-28-4P, 3-Methylhexanal 22092-54-2P, 2-Ethylpentanal 22858-74-8P,
3-Cyclohexene-1-propanal 27008-12-4P 37596-36-4P, 2-Methyldodecanal

RL: IMF (Industrial manufacture); PREP (Preparation)
 (hydroformylation of olefins with transition metal
 diphosphine complexes as catalysts)

IT 100-40-3, 4-Vinylcyclohexene 100-42-5, reactions 111-66-0, 1-Octene
 112-41-4, 1-Dodecene 112-62-9, Methyl oleate 142-29-0, Cyclopentene
 558-37-2, 3,3-Dimethyl-1-butene 592-41-6, 1-Hexene, reactions
 693-89-0, 1-Methylcyclopentene 695-12-5, Vinylcyclohexane 763-29-1,
 2-Methyl-1-pentene 872-05-9, 1-Decene 931-87-3, cis-Cyclooctene
 1192-37-6, Methylenecyclohexane 4490-75-9, N-(2-
 Mercaptoethyl)phthalimide 7585-39-9, β -Cyclodextrin 7642-09-3,
 cis-3-Hexene 13269-52-8, trans-3-Hexene 18162-48-6,
 tert-Butylchlorodimethylsilane 39801-32-6, N-(3-
 Mercaptopropyl)phthalimide 96776-80-6, Bis(hydroxymethyl)diphenylphospho-
 nium chloride 118312-98-4, N-(4-Mercaptobutyl)phthalimide

RL: RCT (Reactant); RACT (Reactant or reagent)
 (hydroformylation of olefins with transition metal
 diphosphine complexes as catalysts)

IT 29390-67-8P, 6A-Amino-6A-deoxy- β -cyclodextrin 67217-55-4P
 73667-73-9P 98169-85-8P 128262-67-9P 129867-48-7P 191103-00-1P
 191103-01-2P 202815-40-5P 202815-41-6P 202815-42-7P 202815-43-8P
 202924-95-6P 202924-96-7P 202924-97-8P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)
 (hydroformylation of olefins with transition metal
 diphosphine complexes as catalysts)

IT 68-12-2, DMF, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (in hydroformylation of olefins with transition metal
 diphosphine complexes as catalysts)

RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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 (2) Anon; WO 9622267 A1 CAPLUS
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L3 ANSWER 8 OF 10 CAPLUS COPYRIGHT 2005 ACS on STN

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| Full Text | Citing References |
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AN 1998:5127 CAPLUS
 DN 128:88378
 ED Entered STN: 07 Jan 1998
 TI Polyvinylpyridine chloroaluminum borohydride as a new stable, and
 efficient reducing agent in organic synthesis
 AU Tamami, Bahman; Lakoraj, Moslem Mansour; Yeganeh, Hamid
 CS Department of Chemistry, Shiraz University, Shiraz, Iran
 SO Iranian Polymer Journal (1997), 6(3), 159-167
 CODEN: IPJOFF; ISSN: 1026-1265
 PB Polymer Research Center of Iran
 DT Journal
 LA English
 CC 21-2 (General Organic Chemistry)
 OS CASREACT 128:88378
 AB The unstable chloroaluminum borohydride, Al(BH₄)Cl₂, is stabilized on
 poly(vinylpyridine) which is used as an efficient and regenerable polymer
 supported transition-metal borohydride reagent for redn. of variety of
 org. compds. such as, aldehydes, ketones, acid chlorides, epoxides and
 azides. The reagent is unable to reduce, esters, amides, oximes, and

nitro compds.

ST chloroaluminum borohydride polymer supported reducing agent; vinylpyridine polymer support reducing agent; aldehyde redn polymer supported chloroaluminum borohydride; ketone redn polymer supported chloroaluminum borohydride; acid **chloride** redn supported chloroaluminum borohydride; epoxide redn polymer supported chloroaluminum borohydride; **azide** redn polymer supported chloroaluminum borohydride

IT Acid halides
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (acid **chlorides**; use of poly[vinylpyridine]-chloroaluminum borohydride as reducing agent for carbonyl compds., epoxides, acid **chlorides**, and **azides**)

IT Reducing agents
 (use of poly[vinylpyridine]-chloroaluminum borohydride as reducing agent for carbonyl compds., epoxides, acid **chlorides**, and **azides**)

IT Aldehydes, reactions
Azides
Epoxides
Ketones, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (use of poly[vinylpyridine]-chloroaluminum borohydride as reducing agent for carbonyl compds., epoxides, acid **chlorides**, and **azides**)

IT 66-99-9, 2-Naphthalenecarboxaldehyde 83-33-0, 1-Indanone 89-98-5,
2-Chlorobenzaldehyde 96-09-3, Styrene oxide 98-86-2, Acetophenone,
 reactions 98-88-4, Benzoyl **chloride** 102-92-1, Cinnamoyl
chloride 103-79-7, Phenylacetone 103-80-0, Phenylacetyl
chloride 104-55-2, Cinnamaldehyde 104-87-0,
 4-Methylbenzaldehyde 106-23-0, Citronellal 106-90-1 106-91-2
119-52-8, 4,4'-Dimethoxybenzoin 119-53-9, Benzoin 119-61-9,
 Benzophenone, reactions 120-57-0, Piperonal 120-92-3, Cyclopentanone
121-90-4, 3-Nitrobenzoyl **chloride** 122-01-0, 4-Chlorobenzoyl
chloride 122-04-3, 4-Nitrobenzoyl **chloride** 122-57-6,
 Benzalacetone 122-60-1, (Phenoxy)methyl oxirane 122-78-1,
 Phenylacetaldehyde 123-11-5, 4-Methoxybenzaldehyde, reactions
514-15-8, Apocamphor 591-78-6, 2-Hexanone 622-79-7, Benzyl
azide 1192-17-2, 2,2-Diethyloxirane 1516-60-5,
 1-Azido-4-nitrobenzene 1713-33-3, 1-Methylcyclohexene oxide 2085-88-3,
 α -Methylstyrene oxide 2142-68-9, 2'-Chloroacetophenone
2788-86-5, p-Chlorostyrene oxide 3296-05-7, 1-Azido-4-chlorobenzene
3669-66-7 6921-40-0, 1-Azidonaphthalene 14901-07-6 18756-01-9
59611-34-6 71559-13-2, 2-Azidocyclohexanol 91890-91-4 170467-19-3
201028-85-5

RL: RCT (Reactant); RACT (Reactant or reagent)
 (use of poly[vinylpyridine]-chloroaluminum borohydride as reducing agent for carbonyl compds., epoxides, acid **chlorides**, and **azides**)

IT 25232-41-1DP, Poly(4-vinylpyridine), dichloroaluminum borohydride complex
55874-51-6DP, poly[vinylpyridine]-supported
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (use of poly[vinylpyridine]-chloroaluminum borohydride as reducing agent for carbonyl compds., epoxides, acid **chlorides**, and **azides**)

IT 60-12-8P, Phenethyl alcohol 91-01-0P, Benzhydrol, 96-41-3P,
 Cyclopentanol 97-95-0P, 2-Ethyl-1-butanol 98-85-1P,
 α -Methylbenzyl alcohol 100-01-6P, p-Nitroaniline, preparation
100-46-9P, Benzyl amine, preparation 100-51-6P, Benzyl alcohol,
 preparation 104-54-1P 105-13-5P, 4-Methoxybenzyl alcohol 106-22-9P,

Citronellol 106-47-8P, p-Chloroaniline, preparation 134-32-7P,
 1-Aminonaphthalene 492-70-6P, 1,2-Diphenylethylene glycol 495-76-1P,
 Piperonal 589-18-4P, 4-Methylbenzyl alcohol 619-25-0P, 3-Nitrobenzyl
 alcohol 619-73-8P, 4-Nitrobenzyl alcohol 626-93-7P, 2-Hexanol
 698-87-3P, 1-Phenyl-2-propanol 873-63-2P, 3-Chlorobenzyl alcohol
 1123-85-9P, β -Methylphenethyl alcohol 1592-38-7P,
 2-Naphthalenemethanol 1875-88-3P, 4-Chlorophenethyl alcohol 2761-08-2P
 2761-09-3P 4464-76-0P 6180-61-6P, 3-Phenoxy-1-propanol 6351-10-6P,
 1-Indanol 6850-38-0P, 2-Aminocyclohexanol 6939-95-3P 7443-70-1P,
 cis-2-Methylcyclohexanol 7568-93-6P, α -(Aminomethyl)benzyl alcohol
 17488-65-2P, 4-Phenyl-3-buten-2-ol 17849-38-6P, 2-Chlorobenzyl alcohol
 27008-60-2P, 3-Buten-2-ol, 4-(2,6,6-trimethyl-1-cyclohexen-1-yl)-
 30884-63-0P 59611-38-0P 126775-65-3P 170467-20-6P 180294-10-4P,
 2,7-Nonadien-1-ol, 4,8-dimethyl-, (E)- 201028-86-6P

RL: SPN (Synthetic preparation); PREP (Preparation)

(use of poly[vinylpyridine]-chloroaluminum borohydride as reducing
 agent for carbonyl compds., epoxides, acid chlorides, and
 azides)

RE.CNT 39 THERE ARE 39 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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- (2) Carey, F; "Advanced Organic Chemistry", Part B 1977
- (3) Charles, J; Aldrich Catalogue, "Handbook of Fine Chemicals" 1993-1994
- (4) Charles, J; The Aldrich Catalogue of Infrared Spectrum 1970
- (5) Firouzabadi, H; Bull Chem Soc Jpn 1997, V70, P155 CAPLUS
- (6) Firouzabadi, H; Iran J Sci Tech 1995, V19, P103 CAPLUS
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- (13) Goudgaon, N; Synth Commun 1989, V19, P805 CAPLUS
- (14) House, H; Modern Synthesis Reactions 1972
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- (18) Hutchins, R; Tetrahedron Lett 1980, V21, P813 CAPLUS
- (19) Kabalka, G; Synth Commun 1990, V20, P293 CAPLUS
- (20) Kotsuki, H; Bull Chem Soc Jpn 1988, V61, P2684 CAPLUS
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- (30) Sorrell, T; Tetrahedron Lett 1978, V50, P4985
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 1987
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- (39) Yoon, N; Tetrahedron Lett 1983, P5367 CAPLUS

L3 ANSWER 9 OF 10 CAPLUS COPYRIGHT 2005 ACS on STN

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| Full Text | Citing References |
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AN 1992:235110 CAPLUS
 DN 116:235110
 ED Entered STN: 13 Jun 1992
 TI Nucleophilic substitutions of 1-alkenylcyclopropyl esters and 1-alkynylcyclopropyl chlorides catalyzed by palladium(0)
 AU Stolle, Andreas; Ollivier, Jean; Piras, Pier Paolo; Salaun, Jacques; De Meijere, Armin
 CS Inst. Org. Chem., Georg-August-Univ., Goettingen, D-3400, Germany
 SO Journal of the American Chemical Society (1992), 114(11), 4051-67
 CODEN: JACSAT; ISSN: 0002-7863
 DT Journal
 LA English
 CC 24-2 (Alicyclic Compounds)
 OS CASREACT 116:235110
 GI



AB The 1-ethenylcyclopropyl sulfonates I (R = p-tolyl, Me) and 2-cyclopropylideneethyl esters II (R1 = Ac, CO2Et), readily available from 1-ethoxycyclopropanol, undergo regioselective Pd(0) catalyzed nucleophilic substitution via an unsym. 1,1-dimethylene- π -allyl complex. With stabilized anions (enolates of malonic ester, β -dicarbonyl compds., β -sulfonyl ester, and Schiff bases as well as acetate anion, sulfonamide anion, etc.) the nucleophilic substitution occurs at the terminal vinylic position exclusively, providing cyclopropylideneethyl derivs. as building blocks of high synthetic potential. Competition expts. disclosed that I (R = p-tolyl) and II (R1 = Ac) are more reactive than dimethylallyl acetates. Use of chiral phosphines as ligands in the palladium catalyst can provide optically active methylenecyclopropane derivs. With phenyl-, methyl-, and even n-butylzinc chloride as nucleophiles, the reaction apparently proceeds with initial transfer of the org. residue to palladium, followed by reductive elimination entailing tertiary substitution on the cyclopropane ring exclusively; the same type of product is obtained with azide and bis(trimethylsilyl)amide. The site of hydride attack to yield redn. products depends on the hydride source. 1-Alkynylcyclopropyl chlorides III (R2 = H, Me, Me3Si) react only with organozinc chlorides (nonstabilized nucleophiles) to provide mixts. of ethenylidenecyclopropanes and alkynylcyclopropanes, via the σ -palladium complexes, while chloride III (R2 = Ph) undergoes mainly redn. Other transition metal catalysts (Ni, Mo) also induce substitutions, but with poorer regioselectivity.

ST nucleophilic substitution alkenylcyclopropyl ester alkynylcyclopropyl chloride; palladium catalyst nucleophilic substitution; regiochem nucleophilic substitution alkenylcyclopropyl ester; cyclopropane ethylidene

IT Substitution reaction, nucleophilic (of alkenyl cyclopropyl esters and alkynylcyclopropyl chlorides)

IT Regiochemistry (of nucleophilic substitution reactions of cyclopropyl esters)

IT Substitution reaction catalysts

(nucleophilic, palladium complexes, for alkenylcyclopropyl esters and alkynylcyclopropyl chlorides)

IT 13837-45-1, 1-Ethoxycyclopropanol
RL: PROC (Process)
(Grignard propenylation of)

IT 557-93-7, 2-Bromopropene
RL: RCT (Reactant); RACT (Reactant or reagent)
(Grignard reaction of, with cyclopropanone hemiacetal)

IT 22935-31-5
RL: RCT (Reactant); RACT (Reactant or reagent)
(acylation of)

IT 57951-60-7
RL: RCT (Reactant); RACT (Reactant or reagent)
(attempted substitution reaction of)

IT 7681-65-4, Cuprous iodide
RL: CAT (Catalyst use); USES (Uses)
(catalysts, for Grignard methylation of (phenylethynyl)cyclopropyl carbonate)

IT 14264-16-5, Bis(triphenylphosphine)nickel dichloride
RL: CAT (Catalyst use); USES (Uses)
(catalysts, for phenylation of vinylcyclopropyl tosylate)

IT 14221-01-3, Tetrakis(triphenylphosphine)palladium
RL: CAT (Catalyst use); USES (Uses)
(catalysts, for substitution reactions of alkenylcyclopropyl and cyclopropylidene Et esters)

IT 32005-36-0
RL: CAT (Catalyst use); USES (Uses)
(catalysts, for substitution reactions of alkenylcyclopropyl or cyclopropylidene Et esters and alkynylcyclopropyl chlorides)

IT 74592-36-2
RL: RCT (Reactant); RACT (Reactant or reagent)
(hydride redn. or methylation of)

IT 69555-14-2 112519-20-7 130715-13-8 130715-14-9 130715-15-0
130715-16-1 130715-17-2 130715-18-3
RL: RCT (Reactant); RACT (Reactant or reagent)
(lithiation and substitution reaction of, with alkenylcyclopropyl ester)

IT 82979-27-9
RL: RCT (Reactant); RACT (Reactant or reagent)
(methylation-dehydrochlorination of)

IT 1663-45-2, Dppe
RL: CAT (Catalyst use); USES (Uses)
(palladium catalysts contg., for substitution reactions of alkynylcyclopropyl and cyclopropylidene Et esters)

IT 70624-84-9P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. and acetylation of)

IT 28974-51-8P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. and acylation or oxidn. of)

IT 136964-30-2P 136964-33-5P 136964-36-8P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. and borohydride redn. of)

IT 57951-63-0P
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. and ethoxycarbonylation or chlorodehydroxylation of)

IT 136964-35-7P

RL: SPN (Synthetic preparation); PREP (Preparation)
 (prep. and ketenimine cleavage of)

IT 139633-92-4P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)
 (prep. and sapon. of)

IT 758-66-7P 22539-80-6P 73680-08-7P 130715-07-0P 130715-08-1P
139633-88-8P 139633-90-2P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)
 (prep. and substitution reaction of, palladium catalyst for)

IT 73680-10-1P 130715-09-2P 136964-21-1P 136964-25-5P 136964-29-9P
136964-42-6P 139633-85-5P 139633-87-7P 139633-89-9P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)
 (prep. and substitution reaction of, palladium catalysts for)

IT 75111-08-9P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)
 (prep. and substitution reaction of, redn. in)

IT 40791-85-3P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)
 (prep. and tosylation of)

IT 73680-09-8P 136964-24-4P 136964-41-5P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)
 (prep. and trifluoroacetylation of)

IT 13905-10-7P 16958-35-3P 18712-30-6P 21777-85-5P 42311-14-8P
50462-85-6P 69447-96-7P 81798-12-1P 136964-26-6P 136964-27-7P
136964-28-8P 136964-31-3P 136964-32-4P 136964-34-6P 136964-37-9P
136964-38-0P 139633-86-6P 139633-95-7P 139633-96-8P 139633-97-9P
139633-98-0P 139633-99-1P 139634-00-7P 139634-01-8P 139655-48-4P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (prep. of)

IT 32364-41-3P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (prep., reaction with acetate, and substitution reactions of)

IT 127-08-2, Potassium acetate
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with (tosyloxy)ethenylcyclopropane)

IT 76189-56-5, (S)-(-)-BINAP
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (substitution reaction of allylcyclopropyl tosylate with malonate in presence of)

IT 38387-33-6
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (substitution reaction of, of palladium catalyst for)

IT 24509-88-4 83662-45-7 130715-11-6 130715-12-7 139633-91-3
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (substitution reaction of, palladium catalyst for)

IT 765-69-5 1074-82-4, Potassium phthalimide 42930-39-2, Butylzinc
 chloride 52755-31-4 60729-65-9 63336-41-4 107201-05-8
139634-02-9 139634-04-1
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (substitution reaction of, with alkenylcyclopropyl ester)

IT 5158-46-3, Methyl zinc chloride
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (substitution reaction of, with alkynyl cyclopropyl chloride)

IT 1191-16-8, 3,3-Dimethylallyl acetate

RL: RCT (Reactant); RACT (Reactant or reagent)
 (substitution reactions of, of palladium catalysts for)

IT 996-82-7, Sodium diethyl malonate 18424-76-5, Sodium **dimethyl**
 malonate
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (substitution reactions of, with alkenylcyclopropyl and
 cyclopropylidene Et esters)

IT 28557-00-8, Phenylzinc **chloride**
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (substitution reactions of, with alkenylcyclopropyl ester of
 alkynylcyclopropyl **chloride**)

IT 81834-42-6
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (tosylation of)

L3 ANSWER 10 OF 10 CAPLUS COPYRIGHT 2005 ACS on STN

| | Full Text | Citing References |
|----|--|-------------------|
| AN | 1988:562253 | CAPLUS. |
| DN | 109:162253 | |
| ED | Entered STN: | 28 Oct 1988 |
| TI | Transition metal complexes of substituted 2,2'-biquinolines. Part 1.
The crystal and molecular structures of [8,8'-bis(aminomethyl)-2,2'-biquinoline]chlorocopper(II) chloride | |
| AU | Chung, Lap Yan; Constable, Edwin C.; Lewis, Jack; Raithby, Paul R.; Kaye, Perry T. | |
| CS | Univ. Chem. Lab., Cambridge, CB2 1EW, UK | |
| SO | Journal of the Chemical Society, Dalton Transactions: Inorganic Chemistry (1972-1999) (1988), (8), 2121-5 | |
| | CODEN: JCDTBI; ISSN: 0300-9246 | |
| DT | Journal | |
| LA | English | |
| CC | 78-7 (Inorganic Chemicals and Reactions)
Section cross-reference(s): 75 | |
| AB | 8,8'-Bis(aminomethyl)-2,2'-biquinoline (L) was prep'd. in 41% overall yield from 8,8'- dimethyl -2,2'-biquinoline by conversion to the 8,8'-bis(bromomethyl) deriv. with N-bromosuccinimide, followed by reaction with NaN ₃ and redn. with LiAlH ₄ . [Cu(L)Cl]Cl and [Mn(L)Cl ₂] were prep'd. and structurally characterized. by x-ray crystallog. The Cu is in a distorted 5-coordinate square-based pyramidal environment in [Cu(L)Cl]Cl with the coordinated Cl occupying the axial site; in contrast, Mn complex exhibits a distorted octahedral geometry about the metal. | |
| ST | crystal structure copper manganese aminomethylbiquinoline; structure copper manganese aminomethylbiquinoline complex; quinoline aminomethylbi transition metal complex; transition metal aminomethylbiquinoline complex; nickel aminomethylbiquinoline complex; zinc aminomethylbiquinoline complex; cobalt aminomethylbiquinoline complex | |
| IT | Crystal structure
Molecular structure
(of copper and manganese aminomethylbiquinoline complexes) | |
| IT | Transition metals , compounds | |
| | RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(aminomethylbiquinoline complexes, prep'n. and crystal structures of) | |
| IT | <u>116886-89-6P</u> | |
| | RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(prep'n. and ESR of). | |
| IT | <u>116886-84-1P</u> <u>116886-85-2P</u> | |
| | RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(prep'n. and crystal structure of) | |
| IT | <u>116894-18-9P</u> , 8,8'-Bis(azidomethyl)-2,2'-biquinoline | |

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (prep. and redn. of)

IT 110589-45-2P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (prep. from dimethylbiquinoline and bromosuccinimide and
 benzoylperoxide and reaction of, with sodium azide)

IT 116886-83-0P 116886-87-4P 116886-91-0P 116907-08-5P 116914-64-8P,
 [2,2'-Biquinoline]-8,8'-dimethanamine
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (prep. of)

IT 1160-86-7, 8,8'-Dimethyl-2,2'-biquinoline
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with bromosuccinimide and benzoylperoxide)

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|--|------------------|---------------|
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FILE 'CAPLUS' ENTERED AT 08:37:39 ON 31 OCT 2005

L1 11392 S AZIDE AND (HALIDE OR FLUORIDE OR BROMIDE OR CHLORIDE OR IODIDE
L2 162 S L1 AND TRANSITION METAL
L3 10 S L2 AND DIMETHYL

FILE 'STNGUIDE' ENTERED AT 08:39:44 ON 31 OCT 2005

FILE 'CAPLUS' ENTERED AT 08:42:27 ON 31 OCT 2005

=> s l1 and propellant
20214 PROPELLANT
20173 PROPELLANTS
25310 PROPELLANT
(PROPELLANT OR PROPELLANTS)
L4 69 L1 AND PROPELLANT

=> d 14 1-69 ti

L4 ANSWER 1 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

Citing References

TI Model and pilot plant process design for glycidyl azide polymer (GAP)

L4 ANSWER 2 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

Citing References

TI Methods and compositions for increasing the efficacy of biologically-active ingredients such as antitumor agents

L4 ANSWER 3 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

Citing References

TI A novel method for extraction and analysis of gunpowder residues on double-side adhesive coated stubs

L4 ANSWER 4 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

Citing References

TI High energy binders: Glycidyl azide and allyl azide polymer

L4 ANSWER 5 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

Citing References

TI Synthesis and properties of 1,7-diazido-2,4,6-trinitrazaheptane

L4 ANSWER 6 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

Citing References

TI High-energy propellant with reduced hydrogen chloride pollution containing ammonium dinitramide oxidizer and energetic binders and

plasiticizers

L4 ANSWER 7 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

**Citing
References**

TI Polymeric binders for gas-generating compositions for inflation of vehicle airbags

L4 ANSWER 8 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

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TI Preparation of 5,5'-bi-1H-tetrazole diammonium salts from hydrazine hydrate and dicyan useful as gas generating agents for airbags

L4 ANSWER 9 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

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TI Synthesis of acyloxy- and azide-terminated polyglycidyl azide as energetic plasticizer for propellants and pyrotechnics

L4 ANSWER 10 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

**Citing
References**

TI Ozone degradation study of novel chain extended energetic polymers containing carbon-carbon double bonds

L4 ANSWER 11 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

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TI Two-step method for manufacture of 5,5'-bi-(1H-tetrazole) diammonium salt as inflating composition for vehicle airbags

L4 ANSWER 12 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

**Citing
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TI Clean synthesis of energetic materials using solid-supported reactions and related technologies

L4 ANSWER 13 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

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TI High-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags

L4 ANSWER 14 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

**Citing
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TI Airbag inflators for use with gas generating compositions containing guanidines

L4 ANSWER 15 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

**Citing
References**

TI Cold-burning ammonium nitrate-containing non-azide-based gas generating compositions for airbag inflation

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**Citing
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TI Non-azide gas generator composition, especially for inflation of vehicle airbags, containing ammonium chloride heat sink

L4 ANSWER 17 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

Citing
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TI Acrylate- and substituted acrylate-terminated energetic polyoxyalkylenes as binders for **propellants** and explosives

L4 ANSWER 18 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

Citing
References

TI Fast neutron activation analysis of high energy materials and polymers

L4 ANSWER 19 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

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References

TI Synthesis of high-molecular weight glycidyl **azide** polymer for propellant binders

L4 ANSWER 20 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

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References

TI Process of coating boron particles and effect on characteristics of surface and combustion

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TI Droplet combustion, microexplosion, and sooting characteristics of several energetic liquid **propellants**

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TI Desensitization of energetic materials by forming amorphous compounds

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TI Surface coating of boron powder and its effect

L4 ANSWER 24 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

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References

TI Gas-generating compositions using dicyanamide salts as fuel

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TI Pyrotechnic sheet material

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References

TI Burning rate characteristics of GAP/AN **propellant**

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TI Study on the catalytic thermal decomposition of sodium **azide** and its correlation with the burning rates of nitrogen-generating **propellants**

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TI Recent advances in fire extinguishing pyrotechnics

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TI A process for producing energetic polymers starting with hydroxy-terminated polyglycidyl nitrate

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TI Process and catalysts for the preparation of azidohydrocarbons.

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TI Combustion study of boron-based fuel-rich solid propellant

L4 ANSWER 32 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

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TI Bond analysis of coated boron powder

L4 ANSWER 33 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

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TI Pyrotechnic sheet materials, their manufacture, and inflators for vehicle occupant restraint systems comprising the sheet materials

L4 ANSWER 34 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

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TI Manufacture of azide-terminated azido compound for propellants and explosives

L4 ANSWER 35 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

Citing
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TI GAP/AN/AP/aluminum-magnesium propellants for low pollution and waste cost and their application to Ø70mm motor

L4 ANSWER 36 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

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TI Combustion behavior and thermophysical properties of metal-based solid fuels

L4 ANSWER 37 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

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TI Burning-rate enhancement of organic diazide propellants. Dihalide addition and pressure elevation

L4 ANSWER 38 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

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TI Synthesis of a diazido-terminated glycidyl azide polymer as plasticizer

L4 ANSWER 39 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

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References**

TI Propellants for high-energy decomposition acceleration

L4 ANSWER 40 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

**Citing
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TI Performance-oriented packaging standards; changes to classification, hazard communication, packaging and handling requirements based on UN standards and agency initiative

L4 ANSWER 41 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

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TI 1,5-Diazido-3-nitrazapentane and its preparation

L4 ANSWER 42 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

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TI Synthesis of polymers containing pseudohalide groups by cationic polymerization. 2. Copolymerization of 3,3-bis(azidomethyl)oxetane with substituted oxetanes containing azide groups

L4 ANSWER 43 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

**Citing
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TI Glycidyl azide polymer binder for propellants and its preparation

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TI Synthesis of novel energetic compounds. 8. Electrosynthesis of azidodinitromethyl compounds

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TI Hydroxyl-terminated epichlorohydrin polymers

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TI Aerothermochemical studies of energetic liquid materials: 3. Approximate determination of some thermophysical and thermochemical properties of organic azides

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TI N- and O-alkylations of nitro-substituted 1,3-diphenylureas: preparations of propellant stabilizer derivatives

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TI Composite-modified double-base propellants with glycidyl azide polymer replacement for nitroglycerin plasticizer

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TI Gas-generating material

L4 ANSWER 50 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

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TI Polyazido esters

L4 ANSWER 51 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

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TI Azido derivatives of pentaerythritol

L4 ANSWER 52 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

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TI Tris(2-azidoethyl)amine

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References**

TI 3,5,5-Trinitro-3-azaheptane-1,7-diol

L4 ANSWER 54 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

**Citing
References**

TI Gas generator for automobile safety bag inflation

L4 ANSWER 55 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

**Citing
References**

TI Gas generant propellants

L4 ANSWER 56 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

**Citing
References**

TI Cooled gas generating solid propellants

L4 ANSWER 57 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

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References**

TI Coolant additives for nitrogen-generating solid propellants

L4 ANSWER 58 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

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TI Propellant for automobile safety bag

L4 ANSWER 59 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

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TI Reduction of toxicity of propellant gas

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TI Monofunctional diferrorocenyl compounds

L4 ANSWER 61 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

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TI Nontoxic, noncorrosive, odorless gas generating composition

L4 ANSWER 62 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

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TI Composition for inflation of safety bags in vehicles

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TI Low-temperature, nitrogen gas-generating composition

L4 ANSWER 64 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

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TI Alkali metal borazides for addition to propellants

L4 ANSWER 65 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

**Citing
References**

TI Nitraza diisocyanates

L4 ANSWER 66 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

**Citing
References**

TI Polynitro compounds

L4 ANSWER 67 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

**Citing
References**

TI 3,3,5,5,7,7-Hexanitro-1,9-nonane diisocyanate

L4 ANSWER 68 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

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References**

TI Combustion of explosives

L4 ANSWER 69 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

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References**

TI Combustion of explosives

=> d 14 14 26 28 37 39 46 49 54 55 56 57 59 61 62 63 68 69 all

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| | |
|------|------------|
| Full | Citing |
| Text | References |

AN 2000:98440 CAPLUS

DN 132:139455

ED Entered STN: 11 Feb 2000

TI Airbag inflators for use with gas generating compositions containing
guanidines

IN Cabrera, Raul; Cezary, Grzelczyk

PA Breed Automotive Technology, Inc., USA

SO PCT Int. Appl., 26 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM B60R021-26
 ICS C06B031-12
 CC 50-1 (Propellants and Explosives)
 Section cross-reference(s): 47, 59

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|-------------|--|------|----------|------------------------|----------|
| <u>PI</u> | <u>WO 2000006427</u> | A1 | 20000210 | <u>WO 1999-US14943</u> | 19990630 |
| | W: BR, CA, CZ, DE, GB, JP, KR, MX, PL, RU | | | | |
| | RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE | | | | |
| | <u>US 6123359</u> | A | 20000926 | <u>US 1998-122213</u> | 19980725 |
| | <u>EP 1098791</u> | A1 | 20010516 | <u>EP 1999-938713</u> | 19990630 |
| | R: DE, ES, FR, GB, IT | | | | |
| <u>PRAI</u> | <u>US 1998-122213</u> | A | 19980725 | | |
| | <u>WO 1999-US14943</u> | W | 19990630 | | |

CLASS

| | PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|--|----------------------|-------|--|
| | <u>WO 2000006427</u> | ICM | B60R021-26 |
| | | ICS | C06B031-12 |
| | <u>WO 2000006427</u> | ECLA | B01D039/10; B60R021/26D2; C06D005/06 |
| | <u>US 6123359</u> | NCL | 280/741.000; 149/036.000; 149/062.000; 149/076.000 |
| | | ECLA | B01D039/10; B60R021/26D2; C06D005/06 |

AB An inflator for a vehicle airbag employing non-azide gas generating compns. comprises an igniter and filter. The new filter for airbag inflators is a metal ribbon coiled within the inflator housing. The metal ribbon comprises ≥1 segment of apertures and a segment of expanded metal.

ST airbag inflator gas generator guanidine

IT Airbags (protective)

Gas generators

Igniters

Oxidizing agents

Propellants (fuels)

Pyrotechnic compositions

(airbag inflators with guanidine-contg. gas generating compns.)

IT Filters

(metal-ribbon; airbag inflators with guanidine-contg. gas generating compns.)

IT 1309-37-1, Iron oxide (Fe2O3), uses 11104-65-7, Copper chromite

RL: CAT (Catalyst use); USES (Uses)

(airbag inflators with guanidine-contg. gas generating compns.)

IT 50-00-0, Formaldehyde, formation (nonpreparative) 71-43-2, Benzene, formation (nonpreparative) 74-82-8, Methane, formation (nonpreparative) 74-90-8, Hydrogen cyanide, formation (nonpreparative) 124-38-9, Carbon dioxide, formation (nonpreparative) 630-08-0, Carbon monoxide, formation (nonpreparative) 7446-09-5, Sulfur dioxide, formation (nonpreparative) 7647-01-0, Hydrogen chloride, formation (nonpreparative) 7664-41-7, Ammonia, formation (nonpreparative) 10102-43-9, Nitric oxide, formation (nonpreparative) 10102-44-0, Nitrogen dioxide, formation (nonpreparative)

RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)

(airbag inflators with guanidine-contg. gas generating compns.)

IT 506-93-4, Guanidine nitrate 556-88-7, Nitroguanidine 4000-16-2, Triaminoguanidine nitrate 7631-99-4, Sodium nitrate, uses 7697-37-2D, Nitric acid, alkali metal/alk. earth salts, uses 7757-79-1, Potassium nitrate, uses 7790-98-9, Ammonium perchlorate 10042-76-9, Strontium nitrate 10308-82-4 37160-07-9, Diaminoguanidine nitrate 71816-39-2, Boron nitrate (B(NO₃)₃)

RL: TEM (Technical or engineered material use); USES (Uses)
 (airbag inflators with guanidine-contg. gas generating compns.)
 IT 7732-18-5, Water, formation (nonpreparative)
 RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
 (vapor; airbag inflators with guanidine-contg. gas generating compns.)
 RE.CNT 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD
 RE

- (1) Adamini; US 5806888 A 1998
- (2) Allard; US 5104466 A 1992 CAPLUS
- (3) Armstrong; US 5551724 A 1996
- (4) Canterbury; US 5765866 A 1998
- (5) Cunningham; US 5443286 A 1995
- (6) Faigle; US 5609360 A 1997
- (7) Fulmer; US 5503806 A 1996 CAPLUS
- (8) Hock; US 5665131 A 1997
- (9) Knowlton; US 5739460 A 1998
- (10) Lenzen; US 4858951 A 1989
- (11) Lundstrom; US 5756929 A 1998 CAPLUS
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- (14) Shiki; US 3904221 A 1975 CAPLUS
- (15) Yamato; US 5773754 A 1998 CAPLUS

L4 ANSWER 26 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

| | Full Text | Citing References |
|----|--|-------------------|
| AN | 1995:719551 | CAPLUS |
| DN | 123:174350 | |
| ED | Entered STN: | 04 Aug 1995 |
| TI | Burning rate characteristics of GAP/AN propellant | |
| AU | Kato, Kazushige; Nakashita, Goro | |
| CS | Aichi Works, NOF Corp., Aichi, 470-23, Japan | |
| SO | Kayaku Gakkaishi (1995), 56(3), 130-4 | |
| | CODEN: KAGAEA; ISSN: 1340-2781 | |
| DT | Journal | |
| LA | Japanese | |
| CC | 50-1 (Propellants and Explosives)
Section cross-reference(s): 67 | |
| AB | The burning rate characteristics of propellant generating less HCl, which contains ammonium nitrate (AN) as oxidizer and glycidyl azide polymer (GAP) as binder, was studied to modify its burning rate characteristics for practical use. The burning rate increased when a small amt. of ammonium perchlorate (AP) was added. When the wt. ratio of AP/AN is 1.0:1, the diffusion flame of AP becomes the rate detg. step at 4 MPa pressure and the pressure exponent of the burning rate decreased. When Fe2O3 is added to GAP/AN/AP propellant, the burning rate and the pressure exponent at <5 MPa pressure increased, and the pressure exponent decreased at higher pressure. This was caused by the thermal decompn. rate of AP increased by the Fe2O3 which worked as catalyst. | |
| ST | propellant burning rate GAP AN; glycidyl azide polymer propellant burning rate; ammonium nitrate GAP propellant | |
| IT | Combustion
(burning rate characteristics of glycidyl azide polymer/ammonium nitrate propellants in presence of ammonium perchlorate and ferric oxide) | |
| IT | Combustion catalysts
(propellants contg.; burning rate characteristics of glycidyl azide polymer/ammonium nitrate propellants in presence of ammonium perchlorate and ferric oxide) | |
| IT | Propellants | |

(solid, burning rate characteristics of glycidyl azide polymer/ammonium nitrate propellants in presence of ammonium perchlorate and ferric oxide)

IT 143178-24-9, Glycidyl azide polymer
 RL: TEM (Technical or engineered material use); USES (Uses)
 (binder, propellants contg.; burning rate characteristics of glycidyl azide polymer/ammonium nitrate propellants in presence of ammonium perchlorate and ferric oxide)

IT 7647-01-0, Hydrogen chloride, formation (nonpreparative)
 RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
 (formation of; in combustion of glycidyl azide polymer/ammonium nitrate propellants in presence of ammonium perchlorate and ferric oxide)

IT 1309-37-1, Ferric oxide, uses
 RL: CAT (Catalyst use); USES (Uses)
 (propellants contg.; burning rate characteristics of glycidyl azide polymer/ammonium nitrate propellants in presence of ammonium perchlorate and ferric oxide)

IT 7790-98-9, Ammonium perchlorate
 RL: MOA (Modifier or additive use); USES (Uses)
 (propellants contg.; burning rate characteristics of glycidyl azide polymer/ammonium nitrate propellants in presence of ammonium perchlorate and ferric oxide)

IT 6484-52-2, Ammonium nitrate, uses
 RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (propellants contg.; burning rate characteristics of glycidyl azide polymer/ammonium nitrate propellants in presence of ammonium perchlorate and ferric oxide)

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| | Full Text | Citing References |
|----|--|-------------------|
| AN | 1995:202130 | CAPLUS |
| DN | 122:85000 | |
| ED | Entered STN: 19 Nov 1994 | |
| TI | Recent advances in fire extinguishing pyrotechnics | |
| AU | Reed, R.; Brady, V. L.; Hitner, J. M. | |
| CS | Naval Air Warfare Center Weapons Division, China Lake, CA, 93555-6001, USA | |
| SO | Proceedings of the International Pyrotechnics Seminar (1994), 20TH, 815-28 | |
| | CODEN: PPYSD7; ISSN: 0270-1898 | |
| DT | Journal | |
| LA | English | |
| CC | 50-3 (Propellants and Explosives) | |
| AB | Compns. which undergo flameless deflagration to produce N ₂ and HBr were prep'd. which contain an azido binder, solid tetrazoles, and aryl bromides. Decompn. of azido and tetrazolyl moieties release sufficient heat to provide the thermochem. driving force for deflagration. Calcs. indicated that the bromide is converted into HBr. A formulation contg. 50% decabromodiphenyl ether and 50% binder and tetrazole deflagrates to produce a gaseous mixt. contg. 42 wt.% HBr. Gas compns. at 14.7, 100, 500, and 1000 psi were calcd. using an enthalpy point technique assuming const. entropy. A typical compn. burning at a chamber pressure of 1000 psi and expanded to 14.7 psi has a calcd. exit temp. of 922°K. If the gases were passed through a bed contg. metallic salts of perfluorooctanoic acid, the gases would be cooled, and these salts would decomp. endothermically at relatively low temps. (250°) to yield a denser gas composed of perfluoroheptene and CO ₂ . These calcs. assume that the thermodn. most stable products were formed. Since there is no flame, it is unlikely that the reactions forming these products have gone | |

to completion. A typical compn. contains the glycidyl azide polymer (GAP) as an elastomeric binder (42% N) and the solid fillers ammonium-5-nitraminotetrazole (57% N) and decabromodiphenyl ether (83% Br). Other binders investigated included azido and nitrato polyoxetanes. Plasticizers such as the azido-terminated oligomer of GAP (54% N) were also used to increase the nitrogen content of the binder. The homopolymer of BAMO (3,3-bis[azidomethyl]oxetane) (50% N) was evaluated.

ST flameless deflagration pyrotechnic fire extinguisher; hydrogen bromide fire extinguisher pyrotechnic; perfluorheptene fire extinguisher pyrotechnic; carbon dioxide fire extinguisher pyrotechnic

IT Gas generators
(flameless deflagration of pyrotechnic gas-generating compns. as fire extinguishers)

IT Combustion
(deflagration, flameless; flameless deflagration of pyrotechnic gas-generating compns. as fire extinguishers)

IT Fire
(extinguishers, flameless deflagration of pyrotechnic gas-generating compns. as fire extinguishers)

IT 59595-53-8 94901-15-2 121150-74-1 143178-24-9, Glycidyl azide polymer
RL: TEM (Technical or engineered material use); USES (Uses)
(binder, gas generator compns. contg.; flameless deflagration of pyrotechnic gas-generating compns. as fire extinguishers)

IT 1163-19-5, Decabromodiphenyl ether 32534-81-9, Pentabromodiphenyl ether
160612-50-0, DE 62
RL: TEM (Technical or engineered material use); USES (Uses)
(bromide source, gas-generator compn. contg.; flameless deflagration of pyrotechnic gas-generating compns. as fire extinguishers)

IT 124-38-9, Carbon dioxide, formation (nonpreparative) 355-63-5,
1-Perfluoroheptene 7726-95-6, Bromine, formation (nonpreparative)
7727-37-9, Nitrogen, formation (nonpreparative) 10035-10-6, Hydrogen bromide, formation (nonpreparative)
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(formation; flameless deflagration of pyrotechnic gas-generating compns. as fire extinguishers)

IT 335-67-1D, metal salts 335-95-5, Sodium perfluorooctanoate 603-33-8,
Triphenylbismuth 12029-98-0, Iodine oxide (I2O5) 13446-09-8, Ammonium iodate (NH4IO3) 90430-60-7, Calcium perfluorooctanoate
RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
(gas-generator compns. contg.; flameless deflagration of pyrotechnic gas-generating compns. as fire extinguishers)

IT 57877-65-3 160545-45-9
RL: TEM (Technical or engineered material use); USES (Uses)
(propellant, gas-generator compns. contg.; flameless deflagration of pyrotechnic gas-generating compns. as fire extinguishers)

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| | Full Text | Citing References |
|--|-----------|-------------------|
|--|-----------|-------------------|

AN 1992:553975 CAPLUS
 DN 117:153975
 ED Entered STN: 17 Oct 1992
 TI Burning-rate enhancement of organic diazide propellants. Dihalide addition and pressure elevation
 AU Lee, A.; Jiang, Y. J.; Zhu, D. L.; Law, C. K.
 CS Princeton Univ., Princeton, NJ, 08544, USA

SO AIAA Journal (1992), 30(5), 1298-303
 CODEN: AIAJAH; ISSN: 0001-1452
 DT Journal
 LA English
 CC 50-1 (Propellants and Explosives)
 AB Enhanced droplet combustion of diazidoalkane propellants was obsd. at elevated pressures in the presence of 5-10 vol.% α,ω -dihaloalkane additives, which primarily promoted droplet microexplosion and greatly reduced droplet lifetime. Although the results were compn. dependent, similar results were not obtained for twice as much monohalide or monoazide; the results were obsd. for all dihalides investigated, regardless of their volatilities or choice of halogens. Droplet vaporization expts. performed under nonoxidizing conditions at elevated pressures showed that the microexplosion state was minimally affected but the gasification rate was significantly enhanced. This enhanced rate was, as for oxidizing conditions, not obsd. for monoazides or hydrocarbons of equal volatility. The mechanism of enhanced combustion was not identified.
 ST azidoalkane propellant combustion enhancement; halide alkylene azidoalkane combustion additive; alkyl dihalide azidoalkane combustion additive; droplet microexplosion azidoalkane propellant combustion
 IT Combustion
 (of α,ω -diazidoalkane propellants,
 α,ω -dihaloalkane promoters for, for enhanced droplet microexplosions)
 IT Propellants
 (α,ω -diazidoalkanes, combustion of, α,ω -dihaloalkane promoters for, for enhanced droplet microexplosions)
 IT Azides
 RL: USES (Uses)
 (bis-, alkylene, propellants, combustion of,
 α,ω -dihaloalkane promoters for)
 IT Explosion
 (micro-, of droplets, in combustion of α,ω -diazidoalkane propellants, promotion of, with α,ω -dihaloalkanes)
 IT Alkylene halides
 RL: USES (Uses)
 (α,ω -, combustion promoters, for α,ω -diazidoalkane propellants)
 IT 7782-44-7
 RL: USES (Uses)
 (combustion, of α,ω -diazidoalkane propellants,
 α,ω -dihaloalkane promoters for, for enhanced droplet microexplosions)
 IT 109-64-8, 1,3-Dibromopropane 110-56-5, 1,4-Dichlorobutane 111-24-0,
 1,5-Dibromopentane 627-31-6, 1,3-Diiodopropane 629-09-4,
 1,6-Diiodohexane 821-76-1 2162-98-3, 1,10-Dichlorodecane 4549-32-0,
 1,8-Dibromoocetane
 RL: USES (Uses)
 (promoter, for droplet microexplosions, in enhanced combustion of
 α,ω -diazidoalkane propellants)
 IT 24345-72-0
 RL: USES (Uses)
 (propellant, combustion of, droplet microexplosion enhanced
 in, with α,ω -dihaloalkanes)
 IT 17607-21-5, 1,5-Diazidopentane
 RL: USES (Uses)
 (propellant, combustion of, droplet microexplosion

enhancement in, with α,ω -dihaloalkanes)

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| | |
|-----------|-------------------|
| Full Text | Citing References |
|-----------|-------------------|

AN 1992:197222 CAPLUS
 DN 116:197222
 ED Entered STN: 16 May 1992
 TI Propellants for high-energy decomposition acceleration
 IN Mitarai, Yoshiaki
 PA Asahi Chemical Industry Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 4 pp.
 CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C06D005-00

ICS C06D005-04; C06D005-10

CC 50-1 (Propellants and Explosives)

FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------------------|-------|----------|----------------------|----------|
| ----- | ----- | ----- | ----- | ----- |
| <u>PI JP 03295888</u> | A2 | 19911226 | <u>JP 1990-94162</u> | 19900411 |
| <u>PRAI JP 1990-94162</u> | | 19900411 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|--------------------|-------|------------------------------------|
| ----- | ----- | ----- |
| <u>JP 03295888</u> | ICM | C06D005-00 |
| | ICS | C06D005-04; C06D005-10 |

AB In solid propellants contg. aliph. polyether binders having azide side chains, the water content in the binder is controlled to 0.01-18%. Azide groups are completely decompd. in the propellants.

ST azide decompn propellant water content

IT Propellants

(solid, contg. azide side-chained binder, water content control in)

IT 7732-18-5, Water, miscellaneous

RL: MSC (Miscellaneous)

(content control of, in propellants contg. azide side-chained binders, for higher energy)

IT 140895-69-8P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(prepn. and reaction of, with sodium azide, propellants from, water content control in)

IT 104493-28-9P

RL: PREP (Preparation)

(propellant, prepn. of, water content control in)

IT 98-59-9, p-Toluenesulfonic acid chloride

RL: RCT (Reactant); RACT (Reactant or reagent)

(reaction of, with hydroxymethyl(methyl)oxetane, propellants from, water content control in)

IT 26628-22-8, Sodium azide

RL: RCT (Reactant); RACT (Reactant or reagent)

(reaction of, with methyltoluenesulfonic acid methyloxetane, propellants from, water content control in)

IT 3143-02-0, 3-Hydroxymethyl-3-methyloxetane

RL: RCT (Reactant); RACT (Reactant or reagent)

(reaction of, with toluenesulfonic acid chloride, propellants from, water content control in)

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| | |
|------|------------|
| Full | Citing |
| Text | References |

AN 1990:142320 CAPLUS
 DN 112:142320
 ED Entered STN: 13 Apr 1990
 TI Aerothermochemical studies of energetic liquid materials: 3. Approximate determination of some thermophysical and thermochemical properties of organic azides
 AU Lee, A.; Law, C. K.; Makino, A.
 CS Dep. Mech. Eng., Univ. California, Davis, CA, 95616, USA
 SO Combustion and Flame (1989), 78(3-4), 263-74
 CODEN: CBFMAO; ISSN: 0010-2180
 DT Journal
 LA English
 CC 50-2 (Propellants and Explosives)
 Section cross-reference(s): 51, 69
 AB Through either direct measurement or group additivity calcn., the densities, normal b.ps., latent heats of vaporization, limits of superheat, enthalpies of formation, combustion, and decompn., and adiabatic flame temps. are approx. detd. for the mono- and di-substituted alkyl azides, which have enhanced droplet gasification rates and microexplosion events. Similar detns. are done for some alkyl halides, esp. alkyl bromides; the similarity of their properties to those of the org. azides are noted. Implications of the thermophys. and thermochem. properties for the potential of the azides and halides as jet fuels and jet-fuel additives are discussed.
 ST energetic alkyl azide halide; combustion alkyl azide halide; explosion alkyl azide halide; thermochem alkyl azide halide
 IT Fuels, jet aircraft
 (alkyl azides and halides in, thermochem.
 properties in relation to)
 IT Alkyl azides
 RL: USES (Uses)
 (energetic materials, thermochem. properties of)
 IT Propellants
 (org. azides and halides, thermochem. properties of)
 IT Alkyl bromides
 Alkyl halides
 RL: USES (Uses)
 (thermochem. properties of, as fuels)

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| | |
|------|------------|
| Full | Citing |
| Text | References |

AN 1987:639342 CAPLUS
 DN 107:239342
 ED Entered STN: 25 Dec 1987
 TI Gas-generating material
 IN Goetz, George W.; Hamilton, Brian K.
 PA TRW Automotive Products, Inc., USA
 SO U.S., 7 pp.
 CODEN: USXXAM
 DT Patent
 LA English
 IC ICM C06B045-34
 INCL 149007000
 CC 50-1 (Propellants and Explosives)
 FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----------------------------|------|----------|-----------------|----------|
| <u>PI</u> US 4698107 | A | 19871006 | US 1986-946705 | 19861224 |
| DE 3727822 | A1 | 19880707 | DE 1987-3727822 | 19870820 |
| DE 3727822 | C2 | 19890223 | | |
| CA 1286112 | A1 | 19910716 | CA 1987-545722 | 19870831 |
| JP 63171635 | A2 | 19880715 | JP 1987-230863 | 19870914 |
| JP 04055735 | B4 | 19920904 | | |
| <u>PRAI</u> US 1986-946705 | A | 19861224 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|-------------------|-------|---|
| <u>US</u> 4698107 | ICM | C06B045-34 |
| | INCL | 149007000 |
| <u>US</u> 4698107 | NCL | 149/007.000; 102/286.000; 102/531.000; 149/019.300;
149/035.000; 149/041.000; 149/061.000; 280/728.100;
280/741.000 |

AB Gas-generating structures for inflating vehicle air bags comprise a grain of **azide**-based material which generates gas upon combustion, 1-6 wt.% graphite fibers 3-15 μ in diam. and 0.04-0.125 in. long, and, on the grain, an ignition-enhancing coating comprising a alkali metal **azide**, i.e. NaN₃, 20-50, an inorg. oxidizer, i.e. NaNO₃, 25-35, a fluoroelastomer binder 10-15, Mg 15-25, and fumed SiO₂ 1-3 wt.%. The grain in the structure consists primarily of NaN₃ and Fe oxide and has passages extending axially through the grain and intersecting the opposite axial ends. The graphite fibers increase the burn rate of the grains by 40% compared to those without the fibers and at decreased temps. Actuation of the squib ignites all surfaces nearly simultaneously and the coating ingredients insure its reliable ignition while combustion of the ingredients provides the heat transfer to ignite the grains. The coating controls the heat generation at the grain-filter interface and prevents filter damage by overheating. The coating does not burn so fast as to build up pressure in the grain passages which leads to grain breaking or cracking.

ST **azide propellant coating air bag; sodium azide coating propellant; sodium nitrate coating propellant; silica fume coating propellant**

IT Gas generators

(for automotive air bags, **azide propellant** grains
for, coating with **azide-oxidizer** compns. for increased burn
rate)

IT Bentonite, uses and miscellaneous

RL: USES (Uses)
(in sodium **azide propellant** grains, coated with
azide-oxidizer compns., for air bag inflation)

IT Azides

RL: USES (Uses)
(**propellant** grains, coating with **azide-oxidizer**
compns. for rapid burn rate for air bag inflation)

IT Coating materials

(sodium **azide** and sodium nitrate, on **azide**
propellant grains for air bag inflation)

IT Safety devices

(airbags, automotive, **azide propellant** grains for,
coating with **azide-oxidizer** compns. for increased burn rate)

IT Propellants

(gas-generating, for air bag inflation, coating of **azide**,
with **azide-oxidizer** compns., for increased burn rate)

IT Carbon fibers, uses and miscellaneous

RL: USES (Uses)
(graphite, in **azide propellant** grains, for air bag

inflation, for high burn rate)

IT Rubber, synthetic
 RL: USES (Uses)
 (hexafluoropropene-vinylidene fluoride, binders, in azide-oxidizer coatings on azide propellants for air bag inflation)

IT 7440-44-0 7782-42-5
 RL: USES (Uses)
 (carbon fibers, graphite, in azide propellant grains, for air bag inflation, for high burn rate)

IT 7631-86-9, uses and miscellaneous
 RL: USES (Uses)
 (colloidal, in azide-oxidizer coatings on azide propellant grains for air bag inflation)

IT 7439-95-4, Magnesium, uses and miscellaneous
 RL: USES (Uses)
 (in azide-oxidizer coatings, for azide propellant grains for air bag inflation)

IT 1332-37-2, uses and miscellaneous
 RL: USES (Uses)
 (in sodium azide propellant grains, coated with azide-oxidizer compns., for air bag inflation)

IT 7631-99-4, uses and miscellaneous 26628-22-8, Sodium azide
 RL: USES (Uses)
 (propellant grains contg., and coatings therefor, for air bag inflation)

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| | Full Text | Citing References | | | |
|-----------|---|-------------------|----------|----------------------|----------|
| AN | 1983:146067 | CAPLUS | | | |
| DN | 98:146067 | | | | |
| ED | Entered STN: 12 May 1984 | | | | |
| TI | Gas generator for automobile safety bag inflation | | | | |
| PA | Nippon Oils & Fats Co., Ltd., Japan; Nissan Motor Co., Ltd. | | | | |
| SO | Jpn. Tokkyo Koho, 3 pp. | | | | |
| | CODEN: JAXXAD | | | | |
| DT | Patent | | | | |
| LA | Japanese | | | | |
| IC | C06D005-06 | | | | |
| ICA | A62B035-00 | | | | |
| CC | 50-1 (Propellants and Explosives) | | | | |
| FAN.CNT 1 | | | | | |
| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
| PI | <u>JP 57042598</u> | B4 | 19820909 | <u>JP 1974-61505</u> | 19740531 |
| PRAI | <u>JP 1974-61505</u> | | 19740531 | | |

| CLASS | PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|-------|--------------------|---------------|------------------------------------|
| | <u>JP 57042598</u> | IC C06D005-06 | |

AB Al2O₃, MgO, or SiO₂ is coated with an inorg. salt (e.g., MgCl₂, NH₄Cl) and used for cooling and removal of harmful materials in a gas generator for automobile safety bag inflation. Thus, a 75:25 NaN₃-KClO₄ mixt. was put into a propellant chamber in a 2-chamber cylindrical vessel, while MgCl₂-coated Al2O₃ (300-2000 μ) was charged into another chamber. When the propellant was ignited, a hot gas together with harmful Na₂O at ~2000° was produced. The gas was cooled, and the Na₂O was also converted to NaCl by the MgCl₂-coated Al2O₃.

ST alumina coolant **propellant** gas generator; safety air bag **propellant** automobile

IT Safety devices
(air bags, **propellants** for automotive, contg. magnesium chloride-coated alumina for cooling and sodium oxide conversion)

IT Cooling agents
(alumina, magnesium **chloride**-coated, for **azide**-perchlorate air bag **propellants**)

IT Gases
(generation of, for automobile air bag inflation, magnesium chloride-coated alumina in, for cooling and sodium oxide conversion)

IT **Propellants**
(sodium **azide**, contg. potassium perchlorate, for automobile air bag inflation, with magnesium **chloride**-coated alumina for cooling and sodium oxide conversion)

IT 7786-30-3, uses and miscellaneous
RL: USES (Uses)
(alumina coated with, in **azide**-perchlorate air bag **propellant**, for cooling and sodium oxide conversion)

IT 1313-59-3, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(conversion of, in gas-generating **propellants** for automobile air bags, by magnesium **chloride**-coated alumina)

IT 1344-28-1, uses and miscellaneous
RL: USES (Uses)
(magnesium **chloride**-coated, in **azide**-perchlorate automobile air bag **propellants** for cooling and sodium oxide conversion)

IT 26628-22-8
RL: USES (Uses)
(**propellants**, for automotive air bag inflation, contg. magnesium **chloride**-coated alumina for cooling and sodium oxide conversion)

IT 7778-74-7
RL: USES (Uses)
(**propellants**, sodium **azide**, for automotive air bag inflation, with magnesium **chloride**-coated alumina for cooling and sodium oxide conversion)

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| | Full Text | Citing References | | | |
|-----------|--|-------------------|----------|-----------------------|----------|
| AN | 1981:483094 | CAPLUS | | | |
| DN | 95:83094 | | | | |
| ED | Entered STN: | 12 May 1984 | | | |
| TI | Gas generant propellants | | | | |
| IN | Reed, Russell, Jr.; Lee, Benjamin Y. S.; Henry, Ronald A. | | | | |
| PA | USA | | | | |
| SO | U. S. Pat. Appl., 14 pp. Avail. NTIS Order No. PAT-APPL-196 893. | | | | |
| | CODEN: XAXXAV | | | | |
| DT | Patent | | | | |
| LA | English | | | | |
| CC | 49-1 (Industrial Inorganic Chemicals) | | | | |
| | Section cross-reference(s): 28 | | | | |
| FAN.CNT 1 | | | | | |
| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
| PI | <u>US 196893</u> | A0 | 19810508 | <u>US 1980-196893</u> | 19801014 |

US 4358327
PRAI US 1980-196893
CLASS

A 19821109
19801014

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|------------------|---|--|
| <u>US 196893</u> | NCL | 149/019.400; 149/019.600; 149/088.000; 149/092.000 |
| AB | A gas-generating compn. is prep'd. whose flame temp. is sufficiently low (1000-1400°F) for using it to inflate rubber and plastic devices. The gas generated is N ₂ . An uncured binder compn. of a polyethylene glycol capped polypropylene glycol and a dihydroxytetrazole is prep'd. The biuret trimer of hexamethylene diisocyanate is added as a curative agent. A plasticizer, coolant, and a deflagrating agent are added. Thus, bis(hydroxyethyl)tetrazole, a polyethylene-polypropylene glycol, hexamethylene diisocyanate biuret trimer, 1-methyl-5-(methoxyethyl)-1H-tetrazole, ammonium salt of 5-nitraminotetrazole, and oxamide were compounded for making a compn. that had a flame temp. of 1384 and 694K in the chamber and exhaust. Without oxamide the resp. temps. were 1794 and 1002 K. | |
| ST | nitrogen generating propellant; hydroxytetrazole propellant nitrogen generation; tetrazole propellant nitrogen generation | |
| IT | <u>9003-11-6</u>
RL: USES (Uses)
(binder, for nitrogen-generating compn.) | |
| IT | <u>471-46-5</u>
RL: USES (Uses)
(coolant, in nitrogen-generating compn.) | |
| IT | <u>4035-89-6</u>
RL: USES (Uses)
(curing agent, for nitrogen-generating compn.) | |
| IT | <u>57877-65-3</u> <u>78697-36-6</u>
RL: USES (Uses)
(deflagrating agent, for nitrogen-generating compn.) | |
| IT | <u>7727-37-9P</u> , preparation
RL: PREP (Preparation)
(generation of, compn. for) | |
| IT | <u>78697-39-9</u>
RL: MOA (Modifier or additive use); USES (Uses)
(plasticizer, for nitrogen-generating compn.) | |
| IT | <u>66012-50-8P</u>
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. and hydroxyethylation of) | |
| IT | <u>78697-37-7P</u> <u>78697-38-8P</u>
RL: PREP (Preparation)
(prepn. and use in nitrogen-generating compn.) | |
| IT | <u>78723-01-0P</u>
RL: PREP (Preparation)
(prepn. of and use for nitrogen-generating compn.) | |
| IT | <u>26628-22-8</u>
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with ammonium chloride and bis-(cyanoethyl)ether) | |
| IT | <u>1656-48-0</u>
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with ammonium chloride and sodium azide) | |
| IT | <u>12125-02-9</u> , reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with bis-(cyanoethyl)ether and sodium azide) | |
| IT | <u>17587-08-5</u> | |

RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with chloroethanol)

IT 107-07-3, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with tetrazoles)

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| Full Text | Citing References |
|-----------|-------------------|
|-----------|-------------------|

AN 1978:25117 CAPLUS
 DN 88:25117
 ED Entered STN: 12 May 1984
 TI Cooled gas generating solid propellants
 IN MacSenzie, Gerald L.
 PA United States Dept. of the Navy, USA
 SO U. S. Pat. Appl., 13 pp. Avail. NTIS.
 CODEN: XAXXAV
 DT Patent
 LA English
 CC 50-2 (Propellants and Explosives)

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|-----------------------|------|----------|-----------------------|----------|
| PI | <u>US 3977924</u> | A | 19760831 | <u>US 1974-456703</u> | 19740401 |
| | <u>US 456703</u> | A0 | 19740401 | | |
| PRAI | <u>US 1974-456703</u> | A | 19740401 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|-------------------|-------|--|
| <u>US 3977924</u> | NCL | 149/019.300; 149/035.000; 149/042.000; 149/082.000;
149/083.000 |

AB Azide-based propellants for generating cool gases are prep'd. from NaN₃, a fluorocarbon polymer matrix, SiO₂ combustion catalyst, and NaHCO₃ or Na₂C₂O₄ [62-76-0] as coolant. Thus, propellants contg. NaN₃ 58 (58), SiO₂ 3 (2), Viton A 30 (30), Na₂C₂O₄ 10 (0), and NaHCO₃ 0 (10%) had theor. flame (chamber) temp. 2316 (1096) and exhaust temp. 1068 (356°F), compared to 2900 (2200°F) for a control contg. 68% NaN₃ and no coolant.

ST propellant coolant sodium salt; bicarbonate sodium propellant collant; oxalate sodium propellant coolant

IT Gases

(generation of, sodium azide propellants for, with sodium salt coolants)

IT Cooling agents

(sodium salts, for sodium azide-based gas-generating propellants)

IT Propellants

(gas-generating, sodium azide-based, sodium salt coolants for)

IT Rubber, synthetic

RL: USES (Uses)
 (hexafluoropropene-vinylidene fluoride, matrix, for sodium azide-based gas-generating propellants with sodium salt coolants)

IT 62-76-0 144-55-8, uses and miscellaneous

RL: USES (Uses)
 (cooling agents, for sodium azide-based gas-generating propellants)

IT 9011-17-0

RL: USES (Uses)

(rubber, matrix for sodium azide-based gas-generating propellants with sodium salt coolants)

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| | |
|------|------------|
| Full | Citing |
| Text | References |

AN 1976:579852 CAPLUS
 DN 85:179852
 ED Entered STN: 12 May 1984
 TI Coolant additives for nitrogen-generating solid propellants
 IN McCulloch, Charles R.; MacKenzie, Gerald L.
 PA United States Dept. of the Navy, USA
 SO U.S., 4 pp.
 CODEN: USXXAM
 DT Patent
 LA English
 IC C06B045-10
 INCL 149019300
 CC 50-2 (Propellants and Explosives)
 FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----------------------|------|----------|-----------------------|----------|
| ----- | ---- | ----- | ----- | ----- |
| <u>PI US 3977924</u> | | 19760831 | <u>US 1974-456703</u> | 19740401 |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|-------------------|-------|--|
| ----- | ----- | ----- |
| <u>US 3977924</u> | IC | C06B045-10 |
| | INCL | 149019300 |
| <u>US 3977924</u> | NCL | 149/019.300; 149/035.000; 149/042.000; 149/082.000;
149/083.000 |

AB Propellants generating cooled N gas for safety device inflation are prep'd. from azides and alkali metal acid salt coolants in a polymeric propellant matrix. The coolant decreases the flame temp., maintains the desired level of gases, and reacts with F to render it inert. Thus, a compn. contg. NaN₃ 58, SiO₂ 2, NaHCO₃ 10, and Viton A 30%, on combustion, has chamber and exhaust temps. of 1096 and 356°F, resp., whereas a similar compn. with 68% NaN₃ and no NaHCO₃ shows 2900 and 2200°F, resp.

ST nitrogen propellant carbonate coolant

IT Rubber, synthetic
 (hexafluoropropene-vinylidene fluoride, propellants
 contg. azides and bicarbonate coolants, for safety device
 inflation)

IT Safety devices
 (inflation of, azide nitrogen-generating propellants
 contg. bicarbonate coolants for)

IT Propellants
 (nitrogen-generating, contg. sodium bicarbonate coolant, for safety
 device inflation)

IT 144-55-8, uses and miscellaneous
 RL: USES (Uses)
 (cooling agents, for azide propellants for nitrogen
 generation for safety device inflation)

IT 7727-37-9P, preparation
 RL: PREP (Preparation)
 (generation of, for safety device inflation, azide
 propellants contg. bicarbonate coolants for)

IT 9011-17-0
 RL: USES (Uses)
 (rubber, propellants contg. azides and bicarbonate

coolants, for safety device inflation)

L4 ANSWER 59 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

| | |
|-----------|-------------------|
| Full Text | Citing References |
|-----------|-------------------|

AN 1976:107998 CAPLUS
 DN 84:107998
 ED Entered STN: 12 May 1984
 TI Reduction of toxicity of propellant gas
 IN Kasama, Tsuneo; Shimizu, Haruaki; Fujiyama, Hikaru; Nagaoka, Tadahiko
 PA Nippon Oils & Fats Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 4 pp.
 CODEN: JKXXAF

DT Patent
 LA Japanese
 IC B01J; B01D
 CC 50-2 (Propellants and Explosives)
 FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----------------------------|------|----------|-----------------------|----------|
| <u>JP 50075966</u> | A2 | 19750621 | <u>JP 1973-123699</u> | 19731102 |
| <u>PRAI JP 1973-123699</u> | A | 19731102 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|--------------------|-------|------------------------------------|
| <u>JP 50075966</u> | IC | B01JIC B01D |

AB B or Si, H₃BO₃, SiO₂, MgCl₂ [7786-30-3], C₂C₁₆, PVC, and(or) NH₄ClO₄ are used to reduce the toxicity of gas generated from NaN₃ [26628-22-8]-KClO₄ [7778-74-7] mixts. for air bags. Thus, when gas generated from a compn. of 100 parts of 75:25 NaN₃-KClO₄ and 40 parts MgCl₂ was bubbled through water, the water had pH 7, compared with 11 for a similar test without MgCl₂.

ST air bag gas treatment; sodium azide combustion gas; toxicity reduction propellant gas

IT Safety devices

(air bags, propellants for, contg. magnesium chloride for toxic gas prevention)

IT Poisons

(gases, from air bag inflation, propellants contg. magnesium chloride for preventing)

IT Gases

(generation of, for air bag inflation, propellants contg. magnesium chloride for toxicity redn. in)

IT Bags

(inflatable air, propellants for, contg. magnesium chloride for toxic gas prevention)

IT Propellants

(potassium perchlorate-sodium azide, for air bag inflation, contg. magnesium chloride for toxic gas prevention)

IT 7786-30-3, uses and miscellaneous

RL: USES (Uses)

(in propellants, for toxic gas prevention in air bag inflation)

IT 7778-74-7 26628-22-8

RL: USES (Uses)

(propellants, contg. magnesium chloride for toxic gas prevention in air bag inflation)

L4 ANSWER 61 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

| | |
|-----------|-------------------|
| Full Text | Citing References |
|-----------|-------------------|

AN 1975:482290 CAPLUS
 DN 83:82290
 ED Entered STN: 12 May 1984
 TI Nontoxic, noncorrosive, odorless gas generating composition
 IN Lundstrom, Norman H.
 PA Thiokol Chemical Corp., USA
 SO U.S., 5 pp.
 CODEN: USXXAM
 DT Patent
 LA English
 IC B60R; C06D
 INCL 149035000
 CC 50-2 (Propellants and Explosives)
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|-----------------------|------|----------|-----------------------|----------|
| PI | <u>US 3865660</u> | A | 19750211 | <u>US 1973-340422</u> | 19730312 |
| PRAI | <u>US 1973-340422</u> | A | 19730312 | | |

CLASS

| | PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|--|-------------------|--|------------------------------------|
| | <u>US 3865660</u> | IC B60RIC C06D | |
| | | INCL 149035000 | |
| | <u>US 3865660</u> | NCL 149/035.000; 149/016.000; 252/183.140; 280/741.000;
422/167.000; 423/351.000; 423/410.000 | |

AB A gas-generating compn. useful for inflating passenger-vehicle protective crash bags contains 55.18 wt. % NaN₃ [26628-22-8] and 44.82% anhyd. CrCl₃ [10025-73-7]. To this mixt. is added 9% Al₂O₃ [1344-28-1], resulting in a heat sink that lowers the temp. of the resulting N [7727-37-9] from 1007 to 639°F. LiN₃ [19597-69-4] also is used in place of NaN₃.

ST safety bag gas generation; nitrogen generation safety bag; automobile crash bag gas generator; azide chromium chloride nitrogen generator; alumina coolant nitrogen safety bag

IT Propellants
 (azide-chromium chloride, nitrogen-generating, for automotive safety bags)

IT Safety devices
 (bags, for vehicles, nitrogen-generating compns. for inflating)

IT Bags
 (inflatable safety, for vehicles, nitrogen-generating compns. for)

IT 1344-28-1, uses and miscellaneous
 RL: USES (Uses)
 (cooling agents, for nitrogen generated for vehicle crash bags)

IT 7727-37-9P, preparation
 RL: FORM (Formation, nonpreparative); PREP (Preparation)
 (formation of, from azides and chromium chloride
 for inflating vehicle crash bags)

IT 19597-69-4
 RL: USES (Uses)
 (nitrogen-generating compn. from chromium chloride and, for vehicle crash bags)

IT 10025-73-7
 RL: USES (Uses)
 (nitrogen-generating compns. from azides and, for vehicle safety bags)

IT 26628-22-8
 RL: USES (Uses)
 (nitrogen-generating compns. from chromium chloride and, for

vehicle safety bags)

L4 ANSWER 62 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

| Full Text | Citing References |
|-----------|-------------------|
|-----------|-------------------|

AN 1974:61717 CAPLUS
 DN 80:61717
 ED Entered STN: 12 May 1984
 TI Composition for inflation of safety bags in vehicles
 IN Brennan, Richard L.; Lane, George A.
 PA Dow Chemical Co.
 SO Fr. Demande, 7 pp.
 CODEN: FRXXBL
 DT Patent
 LA French
 IC C06C; B60R
 CC 50-3 (Propellants and Explosives)
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|-----------------------|------|----------|------------------------|----------|
| PI | <u>FR 2160411</u> | A1 | 19730629 | <u>FR 1972-39734</u> | 19721109 |
| | <u>FR 2160411</u> | B1 | 19741004 | | |
| | <u>CA 981465</u> | A1 | 19760113 | <u>CA 1972-154470</u> | 19721023 |
| | <u>NL 7215390</u> | A | 19730521 | <u>NL 1972-15390</u> | 19721114 |
| | <u>JP 48058267</u> | A2 | 19730815 | <u>JP 1972-113569</u> | 19721114 |
| | <u>DE 2256254</u> | A1 | 19730524 | <u>DE 1972-2256254</u> | 19721116 |
| | <u>ES 408648</u> | A1 | 19751101 | <u>ES 1972-408648</u> | 19721116 |
| | <u>GB 1417022</u> | A | 19751210 | <u>GB 1972-52994</u> | 19721116 |
| | <u>US 4157648</u> | A | 19790612 | <u>US 1975-586457</u> | 19750612 |
| PRAI | <u>US 1971-199808</u> | A | 19711117 | | |
| | <u>US 1973-358188</u> | A1 | 19730507 | | |

CLASS

| | PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|--|-------------------|-------|---------------------------------------|
| | <u>FR 2160411</u> | IC | C06CIC B60R |
| | <u>US 4157648</u> | NCL | 060/205.000; 149/035.000; 423/351.000 |

AB Mixts. of azides, halides, and a primer are capable of inflating, upon reaction, a 10-gal car-collision bag to 20 psi in 30 msec. The general reaction is $nAN_3 + MX_n \rightarrow nAX + 3n/2N_2 + M$, in which A is an alkali metal, X is a halogen atom, n is an integer, and M is a metal whose azide is nontoxic because of the possibility of the secondary reaction $nAN_3 + MX_n \rightarrow nAX + M(N_3)_n$. Preferred reactants are $SnCl_2$, $AlCl_3$, $FeCl_2$, and $TiCl$ in amts. 10% above stoichiometric and NaN_3 , LiN_3 , or KN_3 .
 ST collision bag inflation azide; halide azide reaction; safety
 collision bag inflation
 IT Safety devices
 (air bags, azide-chloride propellants for automotive)
 IT Propellants
 (azide-chloride, for automotive safety bags)
 IT Chlorides, uses and miscellaneous
 RL: USES (Uses)
 (propellants, contg. azides for automotive safety bags)
 IT 7446-70-0, uses and miscellaneous 7699-45-8 7705-08-0, uses and
 miscellaneous 7772-99-8 7786-30-3, uses and miscellaneous 10241-04-0
10476-85-4
 RL: USES (Uses)
 (propellants, contg. azides for automotive safety bags)

IT 19597-69-4 20762-60-1 22750-57-8 22756-36-1 26628-22-8
 RL: USES (Uses)
 (propellants, contg. chlorides for automotive safety bags)

L4 ANSWER 63 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

Full Citing
Text References

AN 1973:506512 CAPLUS
 DN 79:106512
 ED Entered STN: 12 May 1984
 TI Low-temperature, nitrogen gas-generating composition
 IN Hendrickson, Roger R.; Munson, William O.; Reed, Russell; Shaw, Graham C.
 PA Thiokol Chemical Corp.
 SO U.S., 5 pp.
 CODEN: USXXAM
 DT Patent
 LA English
 IC F16P; B60R
 INCL 280150000AB
 CC 49-1 (Industrial Inorganic Chemicals)
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|-----------------------|------|----------|-----------------------|----------|
| PI | <u>US 3741585</u> | A | 19730626 | <u>US 1971-158108</u> | 19710629 |
| | <u>JP 57013485</u> | B4 | 19820317 | <u>JP 1973-83502</u> | 19730723 |
| PRAI | <u>US 1971-158108</u> | | 19710629 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|-------------------|--|------------------------------------|
| <u>US 3741585</u> | IC F16PIC B60R
INCL 280150000AB | |
| <u>US 3741585</u> | NCL 280/741.000; 053/434.000; 149/035.000; 252/183.140;
252/372.000; 423/351.000; 423/410.000 | |

AB A compn. which upon ignition forms N at 1200-2000°F and is esp. useful for inflating passenger vehicle crash bags, consists of a mixt. of an alkali metal or alk. earth azide and a metal oxide, sulfide, or iodide. The preferred compn. is Na azide 30-70, V2O5 40-60, and MoS2 1-5%. An intimate mixt. of the materials is made and pelletized. In use, the pellets are placed in a gas generator, and ignited by a B and KNO3 hot-particle type ignition system. In an example 15.4 mmoles of gas/g material were formed and developed 16.4 psia in a 7.6-1 chamber in 0.02 sec.

ST nitrogen generation air bag inflation; azide decompn air bag inflation; automobile air bag inflation compn; vanadium oxide air bag inflation

IT Safety devices
 (air bags, propellants for automotive)

IT Propellants
 (gas-generating, for automotive air bags)

IT 507-25-5 1309-60-0 1313-27-5, uses and miscellaneous 1314-35-8
1314-62-1, uses and miscellaneous 1317-33-5 1317-37-9 2385-85-5
7704-34-9, uses and miscellaneous 26628-22-8

RL: USES (Uses)
 (propellant, for automotive air bags)

L4 ANSWER 68 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

Full Citing
Text References

AN 1939:62496 CAPLUS
 DN 33:62496

OREF 33:8992e-g
 ED Entered STN: 16 Dec 2001
 TI Combustion of explosives
 AU Belyaev, A. F.
 SO J. Phys. Chem. (U. S. S. R.) (1938), 12, 93-99
 DT Journal
 LA Unavailable
 CC 24 (Explosives and Explosions)
 AB The combustion of secondary high explosives differs from that of propellants in that most secondary high explosives are appreciably volatile in the neighborhood of their ignition temps., and hence evapn. may absorb much of the mol. energy liberated at the burning face. B. therefore believes that their combustion takes place in the gas phase. The penetration of combustion from the gas phase into the condensed phase may lead to the immediate development of detonation. An exception to the theory is noted in the case of guncotton which is capable of combustion but is not noticeably volatile. Primary explosives (azides, etc.), in which detonation arises very readily, possess insignificant volatility, although N chloride is an exception, having high volatility but a small energy of activation.
 IT Explosives
 (combustion of secondary)
 IT Detonation
 (of explosives)
 IT Combustion
 (of explosives (secondary))

L4 ANSWER 69 OF 69 CAPLUS COPYRIGHT 2005 ACS on STN

| | |
|------|------------|
| Full | Citing |
| Text | References |

AN 1939:62495 CAPLUS
 DN 33:62495
 OREF 33:8992e-g
 ED Entered STN: 16 Dec 2001
 TI Combustion of explosives
 AU Belyaev, A. F.
 SO Acta Physicochimica URSS (1938), 8, 763-72
 CODEN: ACPYAR; ISSN: 0365-1460
 DT Journal
 LA English
 CC 24 (Explosives and Explosions)
 AB The combustion of secondary high explosives differs from that of propellants in that most secondary high explosives are appreciably volatile in the neighborhood of their ignition temps., and hence evapn. may absorb much of the mol. energy liberated at the burning face. B. therefore believes that their combustion takes place in the gas phase. The penetration of combustion from the gas phase into the condensed phase may lead to the immediate development of detonation. An exception to the theory is noted in the case of guncotton which is capable of combustion but is not noticeably volatile. Primary explosives (azides, etc.), in which detonation arises very readily, possess insignificant volatility, although N chloride is an exception, having high volatility but a small energy of activation.
 IT Explosives
 (combustion of secondary)
 IT Detonation
 (of explosives)
 IT Combustion
 (of explosives (secondary))

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